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Sources of the materials presented are: (1) Educational Resources Information Center (ERIC) publications, (2) Dissertation Abstracts, (3) Masters' Theses in Education, and (4) Nursing Research. In addition, approximately 200 letters were sent to governmental agencies, universities, schools, and professional organizations to locate studies relevant to the review. Materials, most of which were published after 1963, are organized into 13 major sections. Sections and subsections are as follows: (1) Philosophy and Objectives, (2) Manpower Needs and Employment, (3) Curriculum Development, (4) Educational Programs, (5) Instructional Materials and Devices, (6) Learning Processes and Teaching Methods, (7) Student Personnel Services, (8) Facilities and Equipment, (9) Teacher Education, (10) Administration and Supervision, (11) Evaluation, (12) Research, and (13) Other. Among recommendations are: (1) increased federal and state funds for research, (2) in-depth analysis of functions to determine preparation for needed roles, (3) college and university programs to prepare teachers, researchers, and other leaders, (4) effective dissemination of research and other resources, and (5) increased cooperation among vocational education and health oriented agencies and organizations to solve educational problems. (JK)

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*review and
synthesis of research in*

Health Occupations Education



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THE OHIO STATE UNIVERSITY, 1900 Kenny Rd., Columbus, Ohio 43210

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REVIEW AND SYNTHESIS OF RESEARCH IN
HEALTH OCCUPATIONS EDUCATION

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PREFACE

This *Review and Synthesis of Research in Health Occupations Education* should aid researchers and practitioners in assessing the current "state of the art" in the field. Further, it should assist in identifying voids in our present research framework and enhance future studies, both in terms of their substantive focus and methodological approaches. The compact nature of the review should be of assistance to practitioners in expediting the applications of research findings to operating programs in vocational and technical education.

In health occupations education and in education generally, research and development findings are evolving at such a rapid rate that absolute coverage of all research efforts is an ideal rather than a reality. Some readers may cite gaps in the following review paper but in our judgment the authors have done a commendable job of pulling together the significant research in health occupations education.

Review and Synthesis of Research in Health Occupations Education is one of a series of information analysis papers developed and released by the ERIC Clearinghouse for Vocational and Technical Education. Reviews dealing with other areas are listed in the ERIC VT publications list which follows the bibliography. Scholars who wish to examine the primary sources of data covered in this review and synthesis paper are invited to utilize the bibliography and ERIC system. It will be noted that ED numbers are included for many bibliographical items.

We are indebted to Lewis D. Holloway and Elizabeth E. Kerr for their scholarship and efforts in providing the profession with this new benchmark and perspective on research in health occupations education. Recognition also should be given to Helen Powers of the Division of Vocational and Technical Education, U.S. Office of Education, and Grace Nangle of the Massachusetts Bureau of Vocational Education for their critical review and helpful suggestions for refining the manuscript prior to publication.

Final acknowledgment is given to Harold Rowe, specialist in health occupations education at The Center, for his review and assistance in the development of this publication.

We solicit the suggestions and comments of the profession for improving these publications.

Robert E. Taylor
Director
The Center for Vocational
and Technical Education

INTRODUCTION

While health occupations education has been an integral, identifiable part of the total structure of vocational-technical education since the Health Amendments Act of 1956, health occupations personnel have been prepared in both education and service agencies for many years. Therefore, a substantial number of studies, applicable to this review, were found and are included in this publication. Though many of the studies reviewed may not be considered, by professional researchers, to be of a sophisticated nature, those which the authors felt could be helpful to the field of health occupations education have been included.

Materials for review were obtained from: library sources, e.g., *Dissertation Abstracts*, *Masters' Theses in Education*, and *Nursing Research*; the Educational Resources Information Center (ERIC); and a multitude of administrators, educators, and health professionals throughout the country who responded to approximately 200 letters sent to governmental agencies, universities, schools, and professional organizations. Considerable effort was expended to locate all research applicable to this review. However, it is very likely that studies exist which are not identified in the above mentioned sources or were not brought to the attention of the authors through the mail survey.

The major portion of the identified studies were published after 1963; selected studies, completed prior to that date, have been included when their use was deemed appropriate and advisable. The studies were categorized according to the chapter headings prescribed by the publisher. However, divisions within these areas were made by the authors who also assigned, as applicable, a single study to more than one section.

It will be noted that the preponderance of studies have been conducted in the nursing field. This is understandable because nursing has a comparatively longer history with a generally recognized established role, and a relatively larger number in its work force. While many of these nursing studies may have been already published in research journals, they are included here because of their relationship to or implications for vocational education.

The authors wish to express their appreciation to Thomas F. Tibbits who located and abstracted many of the studies used in this review; Donna J. Davis who edited the manuscript and assisted in numerous other activities pertaining to its development; and the other professional staff of the University of Iowa's Program in Health Occupations Education who carried added burdens so that the authors were able to complete this endeavor.

To all those who contributed materials for review or assisted in any way, the authors wish to express their sincere gratitude.

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Elizabeth E. Kerr

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**REVIEW AND SYNTHESIS OF RESEARCH IN
HEALTH OCCUPATIONS EDUCATION**

PHILOSOPHY AND OBJECTIVES

Health occupations education at the vocational and technical level began with the development of practical nursing education. The history and development of practical nursing has been detailed in a book by Johnston (1966) and in studies by Tomlinson (1965) and Kerr, Petersen and Czaja (1968). The preparation of "practical nurses" began about the turn of the century in a variety of unstructured activities, which were very much like the duties now carried out by nurse aides. After the passage of the Smith-Hughes Act of 1917, a few local practical nursing programs were established under the provisions of the Act, which provided for trade and industrial education. Developments in this field were slow until about 1940, when there was a great increase in the need for and use of such workers. Many who were called practical nurses had only limited preparation for their role and, as licensure became required, large numbers of these nurses were licensed due to their successful experience rather than their having completed a preparatory program for nursing.

In 1946 the George-Barden Act, an amendment and extension of the Smith-Hughes Act, provided additional funds which were used for the support of educational programs to prepare practical nurses (known as vocational nurses in the States of Texas and California). Practical nurse education was given particular attention in the Health Amendments Act of 1956, passed as Title II of the George-Barden Act, which provided increased federal monies for matching purposes. Also, the Act required that those states participating in the use of federal funds employ a supervisor or consultant to provide leadership for practical nursing. In recent years the Area Redevelopment Act of 1961, the Manpower Development and Training Act of 1962, and the Vocational Education Act of 1963 have furthered the progress of practical nurse education.

As the practical nurse proved her worth as a supportive worker, the question arose whether other health fields might make use of non-professional assistants and technicians. The history of this development follows the pattern set in practical nursing where in the early stages the supportive personnel were trained on the job to assist in those activities not requiring the actual involvement of the professional health worker.

Widespread acceptance of non-professional auxiliary workers in the health field has been generally slow, but several professional groups have moved in this direction and others are beginning to do so. Expansion in the use of auxiliary workers had grown to the point that a publication of the U.S. Department of Labor's Employment Service (1965) presents information on approximately 200 health occupations, both professional and less-than-professional.

In this review and synthesis we are only concerned with those health occupations at the vocational and technical level. Preparation for these occupations requires a range of activities, from very limited on-the-job training experiences to as much as three years of college preparation with additional intern activities; but health occupations education stops short of preparation at the baccalaureate level.

At first the preparation of registered nurses was done exclusively in the hospital setting. These programs, generally referred to as diploma programs, have traditionally entailed three years of post high school education and experience. The diploma programs have graduated, and continue to graduate, the largest number of nurses prepared to take licensure examinations. As the use of these auxiliary workers grew, it became desirable for some nurses to have a broader educational background and to possess a degree from a university or college; therefore, four-year baccalaureate programs were established. The number of baccalaureate programs have increased considerably in recent years, but such graduates represent only a small portion of all nurses prepared.

There has been a trend to shift nursing and other health occupations education programs from service institutions (hospital, clinic, or other health agency) to area or regional educational institutions. This change is compatible with the role of the comprehensive community college or area vocational school. Simultaneously, a basic change in philosophy is taking place. This new philosophy embraces the principle of charging educational costs to educational institutions supported by the public tax base. Traditionally, service institutions with a subordinate role in education prepared health occupations personnel. The costs of such programs have been included as service charges and therefore borne by patients. Many programs operated by service institutions have been discontinued due to financial stress. Also, the mobility of the present work force precludes the retention of those trained in a particular service institution long enough for them to return services commensurate with the investment made. Shifting the cost to a broad educational base seems appropriate and more compatible with this increased mobility of our labor force.

There are additional advantages to be gained from this shift of health occupations education programs to comprehensive community colleges and area vocational schools. Because of the size and numbers of inter-related programs, proportionate overhead and administrative costs will not only be decreased but will also be borne by education. The potentially larger pool of recruits will, with proper guidance, provide a steady flow of appropriate applicants. The socially accepted objective of "going to college" can be realized and status derived from attending this type of institution instead of a service-oriented institution.

The concerns and problems indicated above have led to the development of associate degree nursing programs in junior or community colleges, and in the process, the programs were shortened from three years to two years.

Leadership in the early stages of this two-year nursing program was provided primarily by Mildred L. Montag, whose project, The Cooperative Research Project in Junior and Community College Education for Nursing, was discussed in her book published in 1959. The nurses prepared in these programs are generally referred to as technical nurses.

Diploma and associate degree nurses are sometimes considered professional nurses along with those holding baccalaureate degrees, but for the purposes of this study they have been defined as technical nurses. This definition is consistent with the presented by the American Nurses' Association (1965a) in its position

paper on nursing education. Many of the new positions being identified in the health field are also at the technical level, e.g., dental laboratory technicians, medical record technicians, and inhalation therapy technicians.

In the brief history of health occupations education presented above we can note that at no point in time has it been designated an entity of its own; however, vocational and technical educators, as well as many in the health field in general, see it as a very important segment of that field.

No studies were found which were specifically designated as investigating the areas of philosophy and objectives in health occupations education. Many studies reported in this publication did include activities which have relevance to this area, but they have been included in the other chapters according to their primary goals. An example of those studies which came closest to fitting this subject is one reported by Nangle (1967a). She described a conference on new educational curricula for sub-professional personnel in the health services in which a broad range of problems and issues in the area of health occupations education were examined. Small-group meetings, speeches by authorities in the field and a tour of the health programs in a local technical institute made up the activities of the conference. Nangle reported that recommendations were made for: (1) regional planning to assess health manpower needs; (2) studies of health personnel functions; (3) cooperative efforts between educators and employers to produce more personnel for health services; (4) better availability of curricular materials; (5) opportunities for secondary school students to learn and become involved in health occupations; (6) the development of educational patterns so that students can move from one level of education to another with a minimum loss of credit and time; and (7) more efforts to prepare health occupations education teachers.

MANPOWER NEEDS AND EMPLOYMENT OPPORTUNITIES

There is a great shortage of adequately prepared health workers. Exemplary of the efforts being expended to face this problem at a national level is the report of a conference jointly sponsored by the U.S. Department of Labor and the U.S. Department of Health, Education and Welfare (1966), which was held to consider the critical challenge of training health service workers. The conference was conducted to discuss the issues, exchange views, and share experiences in matching people to jobs in the health services industry. Representatives of labor, management, education, health organizations, government, professional associations and other interested groups were in attendance. The conferees concluded that: unemployed and underemployed workers constitute a potential source of manpower for entry jobs in the health service industry, training programs for health and related service workers must be expanded, research and demonstration programs in health occupations are needed, and federal resources for training need to be utilized more extensively for programs in the health fields.

The U.S. Department of Health, Education and Welfare, Public Health Service (1967c) also reported a committee study on the needs and problems involved in providing a larger number of allied health workers for employment.

Richwagon (1966), in a study of allied health occupations personnel, reported certain characteristics common among the allied health professions, specified some of the trends in the health field related to an increased interest and active expansion in medical care and its associated health manpower problems, and designated problem areas affecting allied health training.

There has been some interest in the feasibility of developing a model or design for systematically exploring manpower requirements in the health occupations. Polliard (1966) has been involved in a feasibility study of manpower requirements and educational training programs for selected health occupations. He indicates health services are receiving more attention at all levels of government and the percentage of the gross national product for these services increased from 3.5 percent in 1930 to 6 percent in 1965. In his study of the Indianapolis area, Polliard concluded that the health service and education leaders in that urban area were cognizant of the need to develop additional health and manpower resources. He also indicated they were willing to take whatever action was required to insure that adequate numbers of such personnel would be prepared.

In another approach to comprehensive health manpower planning, Jakabauskas (1968) explored the feasibility of developing a comprehensive system for health manpower planning which would involve educators, leaders in the health occupations, state officials, and university research personnel. The assessment of health manpower needs would be accomplished by: (1) completion of long-range estimates of health manpower requirements, (2) collection of data on health manpower trends and training, and (3) a self-survey of manpower needs by personnel representing health occupations and associations in the state or region through the medium of a workshop. Following pilot activities of the type specified above, Jakabauskas details a proposed structure for comprehensive health manpower planning.

Maki (1967) has developed a model for forecasting manpower requirements in the health occupations. He presented an overall view of the use of a forecasting model and reported tests of two models, one a recursive programming model and the other a naive model. These mathematical models accommodate such variables as: number of occupations considered, time period of the forecasting, numbers employed at a given time, average annual earnings, total resources available to the health industry, and the upper and/or lower limits appropriate to supply. The author tested the two models for accuracy by using 1950 data to project health manpower requirements for 1960. The recursive programming model was found to be far more consistent in forecasting accurately.

The remaining portion of this chapter on manpower needs and employment opportunities will be divided into sections which report more specifically on needs, supply, job satisfaction and working conditions.

Manpower Needs

It was originally planned that from a review and synthesis of manpower needs studies in the health occupations education field the authors would ascertain the number of prepared workers needed in the various areas within this field. After a review of the studies it was found that the variables within and between them were so great it would not be wise to attempt such a synthesis. Therefore, the needs studies will be reported, but only the general findings will be noted. The studies have been divided into two sections: those which include multiple occupations and those done specifically for a particular occupation. Appropriate sub-divisions are used under each of these sections.

Multiple Health Fields Studies

The studies within this section are further categorized on the basis of the geographic scope of the study.

National. All of the nationwide studies across several occupations were found to have been conducted by some agency of the U.S. Government. The U.S. Department of Health, Education and Welfare, Public Health Service (1967b) reports there will be an increase in the need for health occupations workers of one million persons by the year 1975. This increase includes personnel at both the baccalaureate level and the less-than-baccalaureate level. In addition to data on manpower needs, the study includes recommendations for: interdisciplinary and core curricula; increased emphasis on teacher education for health occupations education instructors; studies of new methods for delivering health services; and studies of the role of certification, licensing, and accreditation in providing sufficient numbers of quality personnel.

Rosenthal (1967) reported health manpower data from the *Occupational Outlook Quarterly* of the U.S. Department of Labor. He indicated that health worker employment is expected to rise from 4.1 million to 5.9 million workers between 1966 and 1975. The most urgent unmet staffing needs in health institutions in 1966 were in professional health occupations where the longest training time is required. Rosenthal stated that nursing occupations will require the greatest increase in manpower by the year 1975. Without vast increases in the number of preparatory education programs the additional workers specified cannot possibly be prepared.

In a study by the U.S. Department of Labor, Manpower Administration (1967), health facilities were examined to ascertain what technological developments will be affecting manpower in the health service industry and to forecast the outlook for health manpower needs. From an interview survey the Department reports needs for a wide range of health occupations personnel. The report indicated that nursing at the professional, practical and assistant levels accounts for approximately one-half the health service jobs. Further, clinical laboratory personnel, x-ray technologists, rehabilitative technicians, therapists, and pharmacists are in particularly short supply. This report suggested expanding the supply of health workers. Another report by the U.S. Department of Labor (1967) entitled *Health Manpower 1966-75, A Study of Requirements and Supply* also spelled out the percentage increases needed in health manpower.

The U.S. Department of Health, Education and Welfare, Office of Education (1966) supported a National Advisory Committee on Health Occupations Education which met to explore the needs in a variety of health occupations areas. Proposals for vertical mobility and the removal of training from hospital control were considered. The occupations considered in-depth were medical technology, physical and occupational therapy, and those in the area of dental auxiliaries.

State. A large number of statewide studies were found which explored health occupations needs in a variety of service fields.

Lee (1966) reported a study of health services education in Maricopa County and the State of Arizona. The study was concerned with 24 health occupations and was actually a census of paramedical personnel in Arizona. The greatest need was for registered nurses. The needs for licensed practical nurses and nurse aides were smaller numerically, but represented greater percentage increases. Although there had been sizable increases in the number of persons being prepared for paramedical positions, there remained a staggering lack of sufficient personnel.

A study of manpower needs for hospitals conducted by California (1965) also indicated a great need for nursing personnel at all levels. Other personnel specifically designated as being in short supply were psychiatric and medical technicians. Two similar studies reporting the occupational needs and educational requirements for health occupations personnel were done by the University of Connecticut (1967) and by Fincher (1962) for the state of Georgia.

In an effort to provide job market information to serve as a basis for planning effective educational programs, the Idaho Department of Employment (1967) conducted a study of hospital and nursing home personnel in a wide range of health services. While the largest number of additional jobs will be in hospitals, they also forecast a large increase in the number of workers who will be needed in nursing homes.

The Corplan Associates (1966), as part of their survey of vocational and technical education personnel in Illinois, found the need for trained workers in the health services industry will more than double by 1975. They stated there is need for programs in at least three areas: pre-occupational health orientation courses in secondary schools, adult education courses to supplement inservice training programs, and regular preservice vocational and technical education programs in junior and community colleges.

Palomba (1968) conducted a study to predict future occupational employment patterns for Iowa based on predictions within the context of nationwide economic developments. Using data from the Bureau of Labor Statistics she employed a mathematical model to ascertain the needs for that state. Included are predictions for several health occupations areas.

A study to predict public health manpower needs in Iowa was conducted by Smith (1967). By means of using census data for the years 1950 and 1960, extrapolations were made to predict the number of personnel needed for the state. A primary recommendation of the study was the creation and expansion of health occupations education programs in the two-year colleges in Iowa.

An extensive project was conducted by the New York State Department of Labor (1964) to study all technical manpower in that state. The study covered a variety of health occupations personnel, excluding nurses. It found that the largest percentage of technicians in the health occupations field was recruited from outside the health facilities, but that educational institutions played only a small part in the upgrading process. For approximately half of the occupations studied, employers required some work experience. Needs for a large number of skilled technicians were reported.

The Indiana Employment Security Division (1967) combined data from several sources in an effort to present an inventory of projected needs in Indiana hospitals. Their results were similar to the previously mentioned studies.

Statewide studies to establish the number of employees needed in health occupations have also been conducted by the North Carolina Employment Security Commission (1967); the North Dakota Department of Trade and Industrial Education (1967); the South Carolina Employment Security Commission (1966); the Wisconsin State Employment Service (1964); and Stephens (1967), who reported a study for the State of Utah. These studies all report information similar to that already mentioned: there is a great need for personnel in the health field and this need can be expected to increase.

Local. An extensive study of the St. Louis, Missouri area has been completed recently by Davis (1965); the final report should be available soon. As part of this study it was proposed that an identification classification be made of the total spectrum of health care facilities for the St. Louis area.

Indianapolis is another metropolitan area for which an extensive study of health manpower requirements has been done. The Indianapolis Hospital Development Association, Inc., (1966) found their area will experience a substantial health manpower shortage. They predicted that by 1971 there will be an increase of over 50 percent in the demand for health workers. If current trends continue, this demand increase would present a shortage of 3,500 employees by that time. The Association also found that turnover rates as high as 50 percent in paramedical fields were common.

Studies of health occupations personnel have also been conducted by Glynn (1966) for the Waterbury area in Connecticut; Ammer (1967), the Boston metropolitan area; the Washington State Department of Employment Security (1965), King County; and Brown (1964), the Highline Community College area in the State of Washington. The results of these studies further indicate the need for expanding programs which prepare people in a wide range of health occupations.

Single Health Field Studies

A U.S. Department of Health, Education and Welfare Public Health Service (1963) publication reported the Surgeon General's Consultant Group on Nursing. The report discussed the shortage of registered nurses, identified nursing service needs, established goals for the coming decade, made recommendations for further action to help assure adequate nursing services, and discussed the lack of personnel prepared as leaders and teachers in this area. The

need for promotional programs and better salary scales to attract recruits was presented. It was suggested that consideration also be given to recruiting minority groups, men, and older married women and that the present system of nursing education be examined to determine how nursing might better keep pace with technological advancements.

Clark (1964) reported a study of the nurse shortage problem in Vermont. He found a critical need for nurses at all levels and in a variety of positions. A possible lack of continuity in patient care is suggested, due to the use of many part-time nurses. A number of economic, technological, and sociological factors were found to be contributing to the shortage. Recommendations include: a redistribution of nursing education costs, the establishment of more associate degree nursing programs and nursing scholarships, the development of improved personnel policies, the updating of nursing skill utilization, the offering of more refresher courses for graduate nurses, and an increase in recruitment efforts.

In a study of the nursing profession in Idaho medical facilities, Loudermilk (1967) also found there was a shortage of nurses. The National Advisory Commission on Health Manpower (1967) concluded that projections indicate a rise in overall demand for nurses of approximately 300,000 by 1975. Considerable importance was placed on attracting large numbers of the 500,000 to 600,000 qualified nurses who are inactive back into the labor force.

Studies by VanTrump (1961) in Missouri, and Purhonen (1965) in Utah, show a definite shortage of licensed practical nurses. A study of practical nurses in Iowa by Kerr, Petersen, and Czaja (1968) presented a factor which may multiply the shortage of practical nurses. They reported that in just a few years, large numbers of those practical nurses who were licensed by experience will be reaching retirement age. This will have a profound impact on Iowa's supply of licensed practical nurses in the years immediately ahead. Similar situations probably exist in other states.

The current practices and future needs for supportive personnel in rehabilitation centers were explored in an action-research activity reported by Leslie (1967). Leaders from a wide range of health occupations associations made presentations at a workshop; the participants discussed the topics; and recommendations were made relative to the need for, and use of, supportive personnel.

Svacine (1967) conducted a study of the nonprofessional personnel used by physical therapists. A wide range of treatment and nontreatment procedures was reported as being performed by nonprofessional personnel, but there were no definite standards or guidelines regarding the extent to which such personnel were utilized. The results of this study indicated the use of such workers is likely to increase.

A project reported by the Technical Education Research Center, Inc., (1967) documents the need for individuals who can service and maintain the equipment found in hospitals and biomedical research institutions. The need for preparatory programs for biomedical equipment technicians is presented, average salaries are specified, and a curriculum is discussed.

Manpower needs in the field of medical records technology are reported in a study by Love (1968). The study showed an overwhelming need for medical record technicians prepared at the two-year college level. Love suggested

consideration be given to the possibility of developing curricula which would provide transferability to the four-year medical records librarian program.

A study of the needs for radiological technicians is reported by Carlson and Lepak (1963), who showed a definite need for such technicians and indicated that this need will increase in the future. At present, such personnel are being prepared mainly through on-the-job training, but programs based at educational institutions are beginning to become popular. Three classes of technicians are delineated relative to the difficulties of the tasks they perform. Suggestions were given regarding curricula for preparatory programs.

The U.S. Department of Health, Education and Welfare, Public Health Service (1967b) reported a manpower conference for medical laboratory personnel at less than the professional level. It was indicated there is an urgent need to determine and define the skills and manpower needed for this area. A possible reassessment and realignment of laboratory career categories was suggested. Significant changes due to automation are creating needs for new specialties and disciplines in the clinical laboratory. It was felt that allied health careers should be promoted by various means and suggested recruitment ideas were considered. The desirability of providing for mobility within the profession gave rise to a discussion of the possibility of equivalency tests being developed to provide movement between levels and categories.

The need for additional training of personnel to carry out programs pursuant to the Clean Water Restoration Act of 1966 was considered in a study reported by the U.S. Department of Interior (1967). There are 2,600 persons now employed by state and local agencies in this field, but by 1972 an increase of 150 percent can be expected. Concern was expressed over the need to provide federal assistance for training technicians to operate sewage plants.

Cumming *et al.* (1966) reported a conference study to explore the need for technical, or subprofessional, manpower in the mental health area. They indicated that the training of mental health technicians is being considered.

Townsend (1966) tells of the need for, and use of, social workers and visiting nurses to improve the quality of patient care in private pediatric practice. By use of such personnel, hospitalization has sometimes been avoided, or the length of hospital stay reduced, and pediatricians have reportedly been able to make more efficient use of their time. It was suggested that the functions of such paramedical personnel be explored in more detail and that studies be undertaken to determine the most effective way of preparing those who will assist the pediatrician.

A study was also done by Yankauer, Connelly, and Feldman (1968) to ascertain the utilization of allied health workers in pediatric practice. At present, there is little use being made of allied health workers in this field, but 80 percent of those pediatricians responding felt that the use of such personnel would result in improved child care. Therefore, if there is increased interest in the use of such paramedical personnel this will cause an increased need for well prepared nurses, medical assistants, or other appropriate health workers.

Manpower Supply

The need for large numbers of health service workers has been documented by the studies reported in the previous section. Before considering the supply of new personnel becoming available, it seems advisable to review those studies which have looked at the problem of better utilizing presently prepared health workers. Improved utilization could well be a contributing factor to meeting needs in the health field.

Adams (1963) did a study to determine if nursing personnel were being fully utilized, what percent of time they spent giving direct and indirect patient care, and where adjustments might be made to provide more equal distribution of nursing procedures and personnel. The findings of this study show that morning shifts were over-utilized and evening and night shifts were not fully utilized. Recommendations were made that: studies be made of the amount of time spent on activities other than nursing, possible reassignment be made of some of the more time consuming activities presently being done on the morning shifts, more inservice education be provided, and methods be found for motivating personnel to better use their time.

An experimental study to determine how minimal nurse staffing can be and still be effective was conducted by Miller and Bryant (1964). Four different staffing combinations were used and quantitative measures were made of the resultant patient care. The four combinations were: (1) one registered nurse, one practical nurse and one orderly; (2) one registered nurse and two licensed practical nurses; (3) two registered nurses and one licensed practical nurse; (4) three registered nurses. The combination of two registered nurses and one licensed practical nurse always completed more nursing tasks than any other combination. The professional nurses and the observers agreed that one registered nurse and two licensed practical nurses provided a level of nursing which in no way placed the patient in jeopardy; therefore, this was designated as an acceptable minimum. There is need for replication of this study and for considerably more research in this area, to ascertain how nursing service might be most efficiently organized while providing adequate patient care.

A considerable amount of discussion in recent years has revolved around the advisability and practicality of recruiting health occupations personnel trained in the armed forces to help fill the needs for such personnel in civilian life. There have been positive and negative opinions voiced regarding this possibility. Military personnel have generally had good training and experience, but many times they are reluctant to come into the health field as civilians. In many cases they are expected to repeat their educational training in order to become licensed or be certified. Another factor contributing to their reluctance is that they are not generally allowed to perform at the level to which they had become accustomed, due to hospital or professional regulations. Straughn (1965) conducted a study of military programs for specialized medical technicians and post-military employment of these technicians. He indicated that training received by specialized medical technicians did influence their securing employment in hospitals. However, a large number of such personnel are not available to hospitals for employment. The results of this study, of discussions relative to

the use of such personnel, and of the studies which have indicated that the roles of members in the health teams are not adequately established, suggest the need for research across many areas in the health field. Such research might well show how personnel trained in the health field who are leaving military service, and other health workers, might be better utilized to help supply our present and future needs.

Trooboff (1967) studied the employment opportunities for Negroes in health related occupations. He surveyed hospitals, nursing homes and other extended care facilities to measure their unmet staffing needs. His findings indicate that Negroes may find satisfying employment in a large number of new and expanding health-related occupations. He feels that, though discrimination barriers have fallen to negligible proportions, the number of Negroes presently employed in selected health occupations is disproportionately low. The figures reported range from 0.1 percent for physical therapists to 21.9 percent for licensed practical nurses. The median was about 5 percent, compared with an approximate 12 percent Negro population in the United States. The primary factor reported as restricting an increase in the employment of Negroes in this field is the need to raise their educational level so they can qualify to enter health occupations education programs.

One factor affecting the supply of prepared health occupations personnel is state licensing procedure. The U.S. Department of Health, Education and Welfare, Public Health Service (1967c) reports a national survey of licensing practices. Information on paramedical workers at the vocational and technical level is presented for dental hygienists, practical nurses, and radiological technologists.

Nursing Personnel

Two surveys were found that pertain to personnel employed in nursing and personal care homes. Kelleher and Shaughnessy (1964) reported a study of facilities, type of nursing service, patients and personnel. It was found there were licensed nursing personnel on each shift in 31 percent of the homes studied. The nursing supervisor was a registered nurse in approximately one-half of the nursing homes, and almost one-half of the nursing supervisors worked part time, or were "on call." In a large number of the nursing homes, the nursing supervisor also functioned in a dual capacity, such as owner-administrator and nursing supervisor. The largest group of nursing personnel employed in nursing homes was unlicensed nurse aides. Registered nurses and licensed practical nurses were more often found on the day shifts with nurse aides handling the night and evening tours of duty. The average amount of nursing time available per patient/day was one hour and 48 minutes, and the amount of nursing care time available per patient was greatest in the smaller homes.

The U.S. Department of Health, Education and Welfare, Public Health Service (1966) also conducted a study to gather data on the number and types of employees in nursing and personal care homes. The number of workers in these institutions was estimated to be 290,900 persons, over half of whom were nursing personnel. Included were 17,400 registered nurses, 20,500 licensed practical nurses, 113,800 nurse aides. Approximately one-third of the 20,700

administrators were nursing personnel. Only one out of every 10 employees were men.

Technical Nurses. The American Nurses' Association (1967) publication entitled *Facts About Nursing* provides information on the distribution of registered nurses, nursing education, the economic status of nursing, the nursing profession and allied nursing personnel. To reflect most directly on the supply of nurses who will be available, the following discussion is concerned only with graduates. Although this review and synthesis is concerned primarily with vocational and technical level personnel, the number of baccalaureate nurses will be reported in considering the supply of nurses, for they make up a portion of the total number of nurses who could be available. While data on graduates from the various programs preparing registered nurses have been published for each year, this review will compare the number graduated in the years 1961 and 1966 (see table below). This provides a brief but accurate picture of the trend in recent years.

**NUMBER OF GRADUATES OF NURSING PROGRAMS
BY TYPE OF PROGRAM FOR 1961 AND 1966**

Type of Nursing Program	1961 No. Graduates	1966 No. Graduates	5-Year Increase
Associate Degree	917	3,349	2,432
Diploma	25,311	26,278	967
Baccalaureate	4,039	5,498	1,459
Total	30,267	35,125	4,858

Data from: The American Nurses' Association, *Facts About Nursing*, 1967.

The rapid growth of associate degree nursing programs is apparent. Although the total number of diploma graduates for 1966 was 967 more than in 1961, it was reported that the peak year for graduates for this type of program was in 1964 when 28,238 graduated. Therefore, the 1966 figure of 26,278 actually represents a decline when compared to the 1964 figure. While the number of diploma nursing programs has decreased in recent years, the number of graduates has not rapidly declined due to increased enrollments in many of the remaining programs.

The number of graduates per year increased only 4,853 over this five-year period. If the rate of increase is not accelerated within the next five years, it is very unlikely that the need for registered nurses, indicated in the previous section, can be met.

Two reports (1966b) and (1967) by the National League for Nursing (NLN) Research and Study Service present more information regarding the potential supply of nurses. The 1966 report showed a continual rise in the total number of basic programs, with the largest increase being at the practical nursing level. There had been a decline in the number of diploma programs for that year. Associate degree programs, which were at the lowest level in total numbers had shown the greatest percentage increase. The NLN 1967 study indicates that while the number of Negro students admitted increased for all programs, the percentage rose only in the associate degree and practical nursing programs. As many exclusively Negro schools are closing, the number of Negro students who are eligible for licensure as registered nurses has actually dropped. Graduations of men in nursing have shown some increase. For the year reported in this study, graduations from master's and doctoral programs combined actually decreased by 100. This is important when considering the need for administrators and teachers.

The number of nurses reported above who are prepared in educational programs does not take into account the uneven distribution of nurses throughout the country. Regional statistics, from a study by Pennell and Baker (1965), indicated the ratio of active nurses is 300 per 100,000 population for the country as a whole. In Northeastern United States this ratio is 412.5 per 100,000 as compared with a low of 214.9 in the South. This variance may be explained by the numbers of nurses prepared in these geographic areas, the respective economic situations, and other variables; but it seems likely that such variation would affect patient care, a factor worth considerable attention.

An important factor in the shortage of nursing personnel is the large number of inactive nurses. There have been a number of efforts to reactivate nurses through refresher or reorientation courses; these are reported in the chapter on educational programs.

Several studies have been done to ascertain the characteristics of registered nurses and factors which seem to affect the supply of them in the work force. The University of the State of New York (1966) conducted a study to determine the supply of active registered nurses in New York State. During the 10-year period covered by the study the number of nurses registered and residing in New York had increased, but there was a 4 percent decrease in the active nurse population. The employment of active nurses ranged from 57 percent in Long Island to 77 percent in New York City. The overall percentage of nurses in an active status was 67 percent. Of the nurses over age 60, only 11 percent were classed as active, while approximately half of the nurses under age 40 were active. Ninety-two percent of all single nurses were classed as active, while only 55 percent of married nurses were so classified. The largest pool of inactive nurses was found among married women under 50 years of age. Factors such as location of employment, types of positions and degrees held were also examined in this study.

The perception nurses have of the status of nursing undoubtedly has an effect upon their job satisfaction and subsequently their employment. A study by

Perlmutter (1961) investigated nurses' personal perceptions about the status of nursing and the status they see others ascribing to nursing. It reported that the higher their achievement, both in education and on the job, the more unfavorably nurses saw nursing to be. The further removed from active nursing they were, the more favorable were their perceptions. Pierce (1965) did a study to determine the relationship between nursing students' perceptions of nurses and nursing, and the length of their experience in the program of nursing education, the kind of nursing education program in which they were enrolled, and selected biographical factors. Little, if any, relationship was demonstrated between student's perceptions of nurses and nursing and selected biographical factors. Conclusions drawn from the study were that nursing students' perceptions of nurses and nursing are subject to change by modifying factors in the program of nursing education and that the change occurs away from a traditional image of nursing toward a more functional reality of nursing practice.

Craig (1963) conducted a study to discover the reasons given by recent graduates for choosing their first position in nursing. Over half of the respondents accepted a position that was of the type they most preferred. Reasons for their choice were complex, involving both personal and situational factors.

Practical Nurses. The statistical summary by the American Nurses' Association (1967) indicated the number of graduates from practical nursing programs in 1961 was 16,635. By 1966, the number graduating had risen to 25,688, an increase of 9,053. In comparison with the corresponding growth figure for registered nurses reported in the previous section, 4,858, this represents a much larger increase in numbers of graduates per year. This increase in practical nursing graduates parallels the growth in the number of programs which rose from 693 in 1961 to 1,081 programs in 1966.

Kerr and Petersen (1966) conducted a study of unemployed practical nurses in Iowa. They found the mobility of practical nurses from place of birth to location of their nursing preparatory program and between jobs since licensure was relatively low. The majority of licensed practical nurses prepared in Iowa remain in that state. Family responsibilities were found to be the reason most often given for present unemployment; moreover, as children mature and family responsibilities lessen, the majority of the licensed practical nurses plan to return to nursing.

In a study of licensed practical nurses in Illinois, Tomlinson (1965) found that a high proportion had been born out of state and moved to Illinois before and/or after their practical nurse education. He also found them to be a stable group who remained in the same geographic area where their practical nurse education was obtained. Licensed practical nurses were found to have an exceptionally high employment rate. A large imbalance in the numbers of licensed practical nurses was found to exist in the various parts of the state, but Chicago had particularly benefited from the immigration of licensed practical nurses and practical nursing students.

Kittell (1963) did a study of selected background and personnel characteristics of sub-professional nurses. His sample was comprised of 221 licensed practical nurses and 171 Air Force corpsmen who were performing essentially the same tasks as the nurses. A number of comparisons were made between job performance ratings of the two groups. Only 74 of 158 corpsmen who would be leaving the service had considered working in civilian hospitals, and only 52 were really aware of the job opportunities available. Only one corpsman definitely planned to try to work in a civilian hospital. This would indicate a great loss of personnel prepared in the health field.

Nurse Aides. The Board of Education of Chicago (1966) conducted a study to determine ability thresholds necessary for successful job performance by nurse aides. The study was done by testing and rating currently employed nurse aides. Unmarried nurse aides received lower performance ratings in quality of nursing care given, in ability to organize and complete an assignment, and in caring for the incontinent patient. Nurses aides between 22 and 30 years of age received lower ratings than those 41 years of age and older in performance connected with the economical use of supplies. There were some problem variables in testing the nurse aides due to severe language difficulties, their lack of familiarity with test-taking procedures, lack of test motivation, and alleged physical indispositions. A level of 65 on the California Capacity Questionnaire was felt to be a good cut-off point, assuming absence of some of the special factors mentioned previously. The reading threshold established was a 4.2 grade level. It was suggested that a manual dexterity test and threshold be established for use with the preceding measures.

Other Health Occupations Personnel

Only one reference was found appropriate for inclusion in this subsection. The U.S. Department of Health, Education and Welfare, Public Health Service (1964) regularly gathers data to provide a quantitative statement of certain characteristics of health manpower. Although particular emphasis is given to physicians, dentists, and professional nurses, some information is provided on other health occupations. Data are presented on a variety of occupations in the health field such as: the percentages of white and non-white workers, median ages, median earnings, and the number of weeks worked per year.

Job Satisfaction and Working Conditions

The manpower supply in any occupational area is affected considerably by the amount of job satisfaction felt by workers. Such satisfaction depends upon many things, both personal and environmental. Working conditions could be considered a subset under job satisfaction, but as some studies were specifically designated by title under each of these topics, they will be considered separately.

Job Satisfaction

Through use of a Q-sort, Jasperson (1962) found a number of factors related to job satisfaction among nursing personnel in surgical units within a selected

hospital. The areas of greatest satisfaction encompassed the hospital atmosphere and the adequacy of equipment. Dissatisfactions were greatest with salary benefits and hospital policies. More particularly, in the area of dissatisfaction, nursing personnel felt there were insufficient opportunities for job advancements and professional self-improvement. The need for instruction in the area of interpersonal relations were expressed.

Straub (1964) investigated the possibility that job satisfaction would increase following a cooperatively developed inservice education program. A group of technical nurses planned and participated in a series of inservice education meetings. The topics covered were: the legal responsibilities of nurses, interdepartmental relations with the pharmacy, social services and the clinical laboratory, job simplification, and Hodgkins disease. There were also three nursing care conferences. Several of the hypotheses tested were not supported; however, there was a significant increase in job satisfaction on the part of nurses following the inservice education activity.

In a study of operating room nursing assistants, Inman (1960) found an overwhelming number of them were satisfied with their positions. Findings did suggest that the most satisfied male and female nursing assistants were approaching middle age and had adequate experience to have learned the job well. These workers had from ten to fourteen years of education and from five to nine years of experience on the job. It was concluded that factors contributing to job satisfaction for operating room nursing assistants were similar to those found in other studies: personal satisfaction in service to others, varied duties, adequate instruction, personal recognition, and security.

Austin (1962) did a job satisfaction study of nurse aides, orderlies and ward clerks. An employee inventory developed by a nationally known testing service was used to collect the data, and the results were plotted against national norms. The general level of morale for these workers was higher than the national norms. The area of working conditions fell above the national norms, while financial benefits fell far below.

Another satisfaction study of nursing service personnel was conducted by Simon and Olson (1960). In this study of graduate nurses, nurse aides and orderlies, graduate nurses were found to be more satisfied with their wages and the interesting work, but less satisfied with personnel policies and opportunities to communicate with their supervisors. The subsidiary personnel indicated greater satisfaction with the working environment.

Treece (1967), in an investigation of factors affecting the satisfaction of licensed practical nurses, concluded that persistence in this field is more likely when the graduate is single, widowed, or when she expresses a feeling of acceptance by the community. The licensed practical nurse is more likely to continue in a specific practical nursing position if she has definite expectations of advancement. Also, the greatest vocational problem of the licensed practical nurse was her rather ill-defined role.

Although somewhat limited by the small size of the sample studied, Gross and Brown (1967) presented some interesting results through use of the Edwards Personal Preference Survey and the Survey of Inter-personal Values. Registered

nurses were found to score higher than the national norms on preference for achievement, intraception, and dominance. They also placed a greater value on leadership. The registered nurses scored lower than the national norms on needs for affiliation and nurturance and tended to score lower on autonomy. Licensed practical nurses showed greater need than the general population for achievement, deference and intraception, but had lesser needs for autonomy, affiliation, succorance and nurturance.

A study to investigate the extent of satisfaction which practical nurses receive from their work and the degree of relationship between this satisfaction and their interests, both measured and expressed, was conducted by Martin (1968). The Minnesota Vocational Interest Inventory was used to ascertain measured interests and a Likert-type scale to obtain expressed interests. Two groups of subjects were used, one a sample of 1965 graduates of practical nursing schools in Illinois and the other, an employment sample representative of all Illinois employed practical nurses. Martin found that the longer the period of employment, the greater the level of satisfaction on the job. Salary was not significantly related to level of job satisfaction. For the graduate sample, age was found to be significantly related to plans to continue employment and to the importance of three extrinsic job factors: family relationships, extra benefits, and employer-employee relationships. For the employment sample, age was significantly related to two extrinsic job factors: financial and extra benefits. For this group, age was also related to three intrinsic job factors: prestige, independence, and chance for advancement.

Working Conditions

Klein (1963) conducted a study of factors affecting work performance of licensed practical nurses. The results indicated that for the practical nurses surveyed, work performance was positively influenced by such factors as the physical, social, moral and religious, psychological and environmental conditions of the work situation. The data for this study rejected the hypothesis that work performance is positively influenced by role-status factors of the work situation and by cultural environmental factors.

A study of the most pressing job needs reported by registered nurses, nursing supervisors and licensed practical nurses was described by Marlow (1966). Registered nurses considered good working conditions, interesting work and job security as most important, followed by salary. The ranks which nursing supervisors thought their nurses would give to these needs were very similar to those given by the nurses. Practical nurses' responses were similar to those of the registered nurses except they expressed higher interests in good wages and less concern for interesting work.

Mayne (1965) reported a study to determine why nursing home administrators have problems recruiting, training, and maintaining a stable staff of aides. The results showed that low wages and poor working conditions caused termination of employment for more than one-third of the aides under 29 years of age, even though 97 percent indicated they liked this kind of work. Those in the age group 45 years-and-over had been on the job three or more years and 80

percent indicated they planned to remain on the job during the following year. Recommendations for nursing home administrators were that they: (1) establish personnel policies which would insure employment and retention of qualified personnel; (2) reexamine recruitment methods, interviewing, selection and assignment, in relation to past experiences with employee problems; and (3) establish a job description in terms of education, training, and experience needed for various positions.

Another study of employees in nursing and personal care homes has been published by the U.S. Department of Health, Education and Welfare, Public Health Service (1967a). This study reported the number, work experience, special training and wages of such personnel. The amount of work experience for personnel employed in nursing homes was rather low, particularly for those with the least amount of formal preparation. Few employees had taken formal courses on working with the geriatric patient. The turnover rate was very high, as nearly four out of every ten employees had been in their current job for less than one year. The estimated median wage for a standard 40-hour week was \$48.00, with the lowest wages being paid to the nurse aide and the highest to professional personnel.

In a discussion of data from the U.S. Bureau of Labor Statistics' 1960 study of occupational groups, the American Nurses' Association (1961) indicated that the economic conditions for nurses have improved somewhat in recent years, but that nurses should work toward greater gains to reach a level of compensation in keeping with their educational requirements and professional responsibilities.

In recent years there have been instances of nurses beginning to make use of collective bargaining. Hawley (1967) conducted a study on the economics of collective bargaining for nurses. A labor market analysis was used to explore the possible relationship between the use of collective bargaining by nurses and the nurse shortage. The study showed that 90 percent of hospital nurses were employed in general duty positions, that they were associate and diploma graduates, and that their pay level was relatively low. Hawley stated that because of this low salary and other conditions, the appeal of the nursing profession is reduced. This reduction, coupled with the rapid rise in medical care needs, is said to produce a great shortage of nurses. Any effort to effect a solution to this problem would have to deal with many variables, for this study revealed that the activity status of the majority of nurses is influenced by many factors in addition to salary. Because collective bargaining does deal with many variables and has a positive effect on the supply of nurses, Hawley supports greater use of this means of economic pressure.

CURRICULUM DEVELOPMENT

Occupational Analysis

The major goal of vocational and technical education is the preparation of individuals for careers which require less than a baccalaureate degree. With the exception of some of the newer orientation programs, primarily at the high school level, this preparation is for a specific occupation. Therefore, in designing

a curriculum to prepare workers for a particular vocation it is of utmost importance that curriculum designers have an explicit understanding of the worker's role. Only from such a basis can the objectives of a program be adequately determined.

There are a variety of methods used in ascertaining the role of the worker. Probably the least satisfactory, but most frequently used method is an individual or small group of workers or experts in the field simply stating how they do the job, or how it should be done. Such an approach is limited by the breadth of experiences of those involved and tends to perpetuate many biases and outmoded methods.

Traditionally, the job analysis and/or task analysis have been accepted techniques for curriculum development and revision in the field of vocational and technical education. These techniques are used by an individual trained in analysis procedures to gather information on the particular job or task through a variety of means, e.g., observations and interviews. This data is logged, analyzed, and a detailed description of the job or task is prepared. Some believe, however, that an occupational analysis takes a more comprehensive look at an occupation than do the two previously mentioned methods.

Those studies which identify the role of a worker in a given health occupation are included under the occupational analysis portion of this publication. Very few studies were found which specifically indicated by title that their purpose was to do occupational analyses or role studies for the purposes of curriculum development. Many studies were found which had as their major, or at least partial, objective ascertaining the role of various health occupations personnel. Though these studies were not done primarily for curriculum development, those which were descriptive of the role of a particular vocation were included in this section of the review and synthesis.

The major objective of one study was the development of a procedure or model to be used in determining the goals for an instructional program. This study by Decker (1967) was entitled *A Functional Analysis of Paramedical Occupations as a Foundation for Curriculum Development*. The medical laboratory field was used as the experimental group, but it was specified that the procedure developed would be applicable to other areas. Decker admitted that the methods of establishing goals in the past have not been without success, but nor are they wholly adequate. The goals established have been intangible and now need to be further refined. These refinements will require a higher order of specificity, accuracy of inquiry, and observation than historically has been the case in deriving goals.

To refine educational goals Decker used a procedure called "evental analysis," a process of describing in simple terms the real events which a worker must do. This is not a description of the mechanical steps to be completed, but rather of how the worker must perform on a practical test completed within specified limits of time and accuracy. Readers who are familiar with the efforts to shift the emphasis in educational programs from teacher-centered to learner-centered and are cognizant of the relatively recent work in the area of behavioral objectives [i.e., Mager (1962)] will appreciate how well Decker's study fits into the contemporary educational scene.

The remainder of the studies included in this chapter on curriculum development were subdivided into groups based on the various occupations within the health occupations field.

Nursing

For this subsection, nursing studies are divided into the areas of technical and practical nursing. Several studies included baccalaureate nurses but no studies are reported which were exclusively for this level. There are also several studies which include other paramedical personnel who work with or assist nurses.

Nurse educators generally agree that: (1) the preparation of a technical nurse should be such that she will serve as a bedside nurse; (2) the baccalaureate nurse is prepared for professional nursing and to function as a nursing team leader; (3) preparation at the graduate level is required for teaching and administrative positions in nursing (work experience as a professional nurse is recommended as a prerequisite to graduate study); and (4) the practical nurse is prepared to provide limited nursing care for patients whose conditions are stable. However, studies of the actual roles of nurses show that graduates of programs at all levels of basic nursing education are being expected to accept greater responsibilities than those for which they have been prepared.

Technical Nursing. The problems of responsibilities are pointed up dramatically by Jarratt (1967), who examined the conceptions of autonomy of nursing service actions appropriate to staff nurses. His study concluded that conflicts in expectations exist for autonomous actions among those groups who influence the staff nurse role and there is considerable role confusion and ambiguity about the autonomous areas of nursing. Jarratt stated these differences in expectations are great enough that situations requiring decisions for patient welfare may well go unattended due to the confusion about what actions nurses are free and willing to take. Educational programs tend to instill within their graduates an idea of what degree of autonomy they will have in making decisions; but hospital rules and policies, the role and authority of physicians, and a lack of clarification in professional nursing practice tend to operate as restrictions on the nurses' concepts of autonomy. This presents some very uneasy situations for the nurse practitioner.

In an analysis of role behavior, role expectations, role conflict, job satisfaction, and coping patterns of nurses in their beginning positions, Roehm (1966) found conflicts between role expectations and actual role behavior.

In a study of nursing behavior by Erickson (1968) it was found that what the staff nurse does with her time was decided by her employer more often than by what she was taught in her basic education. Nurses were particularly vocal about the time they were required to spend doing paper work. Even the use of ward clerks had not completely solved this problem, and in many cases these personnel are not on duty during all shifts. There were considerable differences in the responsibilities of staff nurses between the various hospitals and even within hospitals between the various shifts. It certainly can be concluded from this study that there is some question whether nurse manpower is being used appropriately and whether more actual nursing care might be given to patients if the nurse had more time to spend giving care or managing personnel who would do so.

A utilization study of associate degree nursing graduates employed in general hospitals was conducted by Forest (1965). The functions of these technical nurses were identified through a review of the literature and verification by appropriate individuals. Data were then collected by a survey of associate degree graduates who had experienced no further formal academic preparation. It was reported that 80 percent of the graduates were in staff nurse positions and over 90 percent of this group spent more than half of their time performing technical nursing functions. Even though the majority of graduates employed in the New York hospitals were not serving in positions above those for which they were prepared, Forest indicated that most of them were performing additional functions. Had the study been conducted at a later date it is possible that the number of associate degree graduates serving as head nurses could have been higher, for it was reported that they were considered for promotion on the same basis as other registered nurses.

In a study of instructors, students and supervisors, Brodt (1963) examined the role expectations of neophyte nurses. There were significant differences in the autonomy which the neophyte nurse was expected to exhibit as seen by the different individuals. Instructors and senior students recognized more activities as being within the autonomy of the neophyte than did supervisors. This may cause the nurse some difficulties as she begins her nursing practice. The differences in autonomy specified for the three levels of nursing further complicates the situation. Brodt suggested that this lack of agreement concerning the autonomy of the beginning nurse does not contribute to professional stature.

The administrative responsibilities assumed by nurses within six months after graduation from three-year diploma schools of nursing were examined by Nametz (1960). It was found that at some time during this period they were expected to assume total administrative responsibilities for a nursing unit. The need for an orientation program for beginning nurses was also emphasized.

A study by Wanska (1967) examined the expectations of employers as perceived by the graduates of associate degree nursing programs. The majority of those surveyed felt they were expected to function in roles for which they were prepared by their nursing programs. The greatest discrepancy in role expectation was in the area of administration and supervision, a responsibility for which associate degree nursing programs do not generally prepare their graduates.

Cockrill (1965) did a study to determine the expectations which general hospitals in the State of Washington had for associates degree nurses. Considerable variance was found among the respondents as to what should be expected of the prospective employee. Most employers expected registered nurses to behave similarly regardless of the type of program from which they graduated. The area of administrative skills is where most conflicts and problems arise. Up to 50 percent of the employers expected all registered nurses to have administrative skills in as little as three weeks from the time of employment. It was suggested that, since the technical nurse is expected to function in this manner, she either should be exposed to such activities in her educational program or should seek employment in a hospital which provides inservice activities geared to meet these needs.

A study by Alexander (1961) is relevant to any discussion on the preparation of nurses for patient, instructional and/or administrative nursing. In order to discover any manifest need differences among freshmen in diploma schools, this study examined their job preferences within the nursing field. Groups categorized by career choices expressed needs which, in general, were similar, although some differences also appeared. Intelligence was not a significant variable in differential career choice. Educators preparing curricula for nursing could profit from a detailed examination of the differences found among these groups. Further research in this area would be of considerable value.

In a study of nursing attitudes and turnover, Lyons (1968) found role clarity and role overload directly related to turnover and absenteeism of hospital staff nurses.

Not only is there a discrepancy in the utilization of technical nurses based on their level of preparation, but Walters (1967) found there was also considerable inconsistency in faculty expectations of the graduates of associate degree nursing programs. Although not generally expressed as an objective of technical nursing programs, some faculty members expect the graduate to be capable team leading and supervisory roles at the time of their employment.

Taves, Corwin, and Haas (1963), in their study of role conception versus vocational success and satisfaction, indicated that ambiguity of self-concept produces dissatisfaction among nurses. They found that satisfaction is positively associated with both a favorable image of nursing and the degree of role consensus with superiors.

Haas (1964) also reported a study of role conception and group consensus among hospital work-groups. He found that low role consensus in permanent groups is directly related to disharmony and annoyance. Furthermore, low consensus in role conception is directly related to role performance rating. The results of this study are certainly important to the field of nursing when we realize the effect this lack of consensus can have on patient care.

As was indicated earlier in reviewing the study of associate degree nurses in New York hospitals by Forest (1965), the role of nurses cannot be expected to be the same in all sizes of hospitals. This is pointed out in a study by Saathoff and Kurtz (1963) which examined general duty nurses and aides in small hospitals. The functions of general duty nurses and aides varied considerably among the seven hospitals: a nurse task in one institution may have been an aide task in another, and both groups were regularly participating in a wide variety of collaborative functions, none of which were identified as the exclusive duty of nurses or aides. With the nurse and the nurse aide both regularly performing some technical tasks for which they were not prepared, Saathoff and Kurtz questioned the quality of patient care. They indicated that these findings should be most important to nursing educators who must consider the nature of patient care in all types of institutions.

The changing role of nurses was studied by Mayberry (1965). The utilization of personnel doing nursing was studied to ascertain whether a reorganization or reallocation of duties might be appropriate. Nurses were found to be spending a great deal of time on clerical, administrative, and other duties. When hospitals

were surveyed again two years after the initial survey, three-fourths had added ward clerks or taught employed clerks to do clerical tasks previously done by nurses; several hospitals had introduced a messenger service in an effort to keep personnel on the unit.

Another example of the crossing of roles within nursing was reported following a study of small hospitals by Kurtz and Edwards (1966). They found that there was a considerable overlapping of duties, that the performance of functions was not related to status held, and that status cannot be identified by functions performed.

As hospitals adjust the role of nurses by employing personnel to take over some of the clerical and administrative duties, it is important that studies be conducted to ascertain whether the employment of such personnel actually allows the nurse to carry out more nursing duties. One study of this type was done by Stryker (1966). The purpose was to determine how the head nurses, ward managers and secretaries spent their time and whether the head nurse had been freed for other duties by the creation of the auxiliary positions. Work sampling the activities of personnel on each of two wards was carried out every fifteen minutes for four days. After the ward managers began functioning, head nurses had increased time to spend with patients and in teaching other personnel. Following a three-month training period for those without nursing experience, there was no difference found between the performance of those ward managers who had nursing experience and the performance of those who had not. Interestingly, the title of ward manager was changed to transcriber and that of secretary to station coordinator in this hospital. Vocational education programs were established to prepare station coordinators and the individuals prepared for these positions were found to need little additional technical instruction on their new jobs.

A study somewhat related to the above examined whether increases in the amount or quality of nursing care will produce improvements in patient care. In this study, Aydelotte and Tener (1960) increased the number of personnel and introduced an inservice education program in an effort designed to increase the amount and quality of patient care. The major result of the experiment was that there was no measurable improvement in patient welfare produced by substantially increasing the size of the ward staff, conducting inservice education programs, or combining staff increase with inservice education. The applicability of this study to other situations might be questioned due to its being conducted in a university hospital, which cannot be a typical hospital setting.

Practical Nursing. The duties of licensed practical nurses working in the hospitals of Missouri were explored by Van Trump (1961). His study involved licensed practical nurses as well as their hospital administrators. The subjects were asked to react to performance duties and rate them as routine, relief, supervised, or never done. The duties were also rated as to whether they were done with either mildly or critically ill patients. The results were that trained licensed practical nurses are performing a considerable portion of their duties

without the direct supervision of professional nurses. Also, the degree of illness of the patient is no longer, if ever, a factor in determining the work assignment of trained licensed practical nurses. This finding is in direct opposition to the regularly accepted statement of the role of the practical nurse. The trained licensed practical nurses indicated a feeling of inadequacy in performing some of their duties, which seems very likely if they have not been prepared to function in this manner. Van Trump indicated the need for practical nursing programs to teach these frequently performed nursing skills.

Barlow *et al.* (1959) also found that licensed practical nurses often performed nursing activities for which they had not been prepared. They specified there is a need for continuing education for these personnel in the area of specialty services. A study by Hill (1963) also indicated a considerable lack of agreement between role expectations and the actual role of practical nurses. Studies by Enke (1961), Penney (1962), Soule (1965), and Watson (1966) all reflect the utilization of licensed practical nurses for activities beyond those for which they had been prepared.

In a study of 527 Texas hospitals, Austin (1966) indicates that, based upon the present utilization of practical nurses, the role of the practical nurse in the future can be expected to broaden. She further stated that the preparation for this role will become more complex and responsibilities will be increased accordingly.

Hill (1963) in a study of role expectations, found significant differences between a number of items pertaining to how practical nurses saw their expected and actual roles. There were also differences between how the practical nurses saw their roles in comparison with other relevant groups.

Orem (1966) has written a guide for developing curricula for the education of practical nurses, which has been given considerable attention in the field and might be of some assistance in exploring the role problem. Although not the results of a research project, this publication was developed with the cooperation of several groups and individuals including program specialists from the Practical Nursing Education Section of the U.S. Office of Education and the National Advisory Committee on Practical Nurse Education.

As part of a large research project regarding the preparation of practical nurses in caring for the mentally ill, Cates (1960) did an interesting role study of ward workers in mental hospitals. Although the major project was concerned with practical nurses, this study included attendants because both of these workers served as the nonprofessional personnel on the wards of the mental hospitals studied. Cates explored the role of the ward worker, role conflicts confronting him, and his responses to these conflicts. The critical incident technique was used to elicit effective and ineffective work behaviors from the ward workers superordinates. The behaviors, which were grouped into seven categories, provide what should be valuable information in planning educational experiences. From the incidents, a variety of role conflicts were identified. Hypothetical role conflict situations were developed and ward workers were asked how they would handle each situation. The largest group of respondents showed they would react to satisfy the patients in such situations while the

smallest group indicated they would avoid the conflict. The employing hospitals evaluated the compromise group, which was the second largest in number, as their best workers. The group which would resolve the conflict situations so as to satisfy the staff was rated as poorest by the hospitals.

The reports of a two-state, 39-month investigation, directed by Robert M. Tomlinson and being cooperatively conducted by the University of Illinois and the University of Iowa, will soon be available. One of the major purposes of this research project, entitled *An Integrated Longitudinal Study of Practical Nursing*, is to examine the discrepancies between actual and alleged roles of practical nurses. Preliminary findings showed that practical nurses are, in fact, performing tasks at a responsibility level much higher than that for which they were prepared.

Assisting Role of Nurse Aides. Hollenbaugh (1966) in comparing the charting ability of nurse aides and licensed practical nurses found that nurse aides were never significantly poorer than licensed practical nurses in their charting. The chartings of these two groups were rated by experienced registered nurses and evaluated on selected qualities of conciseness, organization, understanding, completeness, legibility and accuracy.

Other Health Occupations

Several studies relative to the role of medical assistant were found. Modesitt (1966) did a study of the duties and activities required for effective performance of medical assistants in medical organizations. He found that more than one-half of the employees were employed in one-physician offices. The assistant was the only employee in one-fourth of the offices. Medical assistants performed in the physicians' offices and nearly all semi-technical activities. As might be expected, the larger the medical organization, the less personal contact the medical assistant had with patients. Based upon his analysis of the role of the medical assistant, the author indicated that neither the training for nurses nor the training for secretaries is sufficient for preparing such assistants. He indicated a need for special preparation of such personnel which would include on-the-job experiences.

In a study by Martin (1968), doctors were surveyed on their use of medical assistants. Although the recommendations made as a result of this study are questionable due to the low response rate, there were several findings that seemed worthy of reporting. The office or secretarial duties which showed a high frequency were those involving personal patient relationships while low frequency duties were of a clerical nature. The high frequency technical duties involved providing a sterile and sanitary environment for the patient, while the low frequency duties were of a routine nature.

A curriculum emphasis study for medical assistant programs was done by the New Hampshire Research Coordinating Unit (1968). In this study of physicians with medical assistants in their employ, 68 percent were found to operate their office complex as a single-doctor business. As in Martin (1968), instrument sterilization was the procedure which received the most attention.

A study by Svacine (1967) revealed a wide range of treatment and non-treatment procedures which nonprofessional personnel in the physical therapy are performing. There seemed to be no definite standards or guidelines

regarding the extent to which nonprofessionals are utilized in patient care. The responsibilities given to the physical therapy aide range from independent administration of treatment modalities to general assistance to the physical therapist.

Davidson (1966) conducted a study on the needs and use of rehabilitation personnel. His results indicated there is a willingness to use non-professional personnel and he reported information on the use of such workers which might be helpful in planning programs.

In a study presently being conducted by Berryman (1968), a functional job analysis is to be done of related recreational jobs at all levels. Top administrators and supervisory recreational personnel are being interviewed to gather job analysis data.

Boehler (1964), in a study of a teaching method to be used with psychiatric aides, reported findings which are quite revealing on the ways aides see their role.

Content and Emphasis

The studies reported in this section are similar in some respects to those of the preceding section on occupational analysis, but where the studies reported above dealt with the role of the worker, this section will examine those concerned more directly with curricula.

Nursing

Once again, because most of the studies found were in the field of nursing, they will be examined as a group and will be subdivided into technical and practical nursing.

Technical Nursing. Several guidelines for curriculum improvement were suggested by Crenshaw (1961) in a study of students' competencies in nursing. Interviews were conducted with students, patients being cared for by students, and supervisors in facilities where the students practiced and recent graduates were employed. The suggested guidelines included the following: (1) desirable educational outcomes should be delineated for different types of programs, at various academic levels and in the divisions of the curriculum; (2) faculty members should retain responsibility for curriculum improvement and use information from others such as students, patients and supervisors in certain aspects of planning; and (3) curriculum workers in nursing education should study the "trouble spots" of the role of the instructor, interpersonal aspects in health teaching and nursing, expectations regarding management skills, and the exercise of judgement in nursing as called for in new situations.

A study of some effects of sensitivity training on the performance of students in associate degree programs was conducted by Geitgey (1966). Sensitivity training was given to the experimental group of nurses prior to the opening of school and in follow up training sessions one day per week for four months during the first semester of classes. A volunteer group received instruction in human relations by lecture-discussion method and a control group received no training in this area. Patient evaluations of nursing care for the experimental and volunteer groups were found to be significantly higher for the group which had

sensitivity training. Similarly, Geitgey found a significant difference between instructor evaluations of nursing care performed by the experimental group as opposed to that performed by both the volunteer and control groups.

Cohelan (1963) described nursing activities which students found useful in providing emotionally supportive care to patients. Those characteristics of patients which were most often identified as indicative of emotional need were feelings of fear; loneliness or depression; complaining, demanding or uncooperative behavior; social and economic problems; psychiatric disorders; and severe physical problems. Nursing care which was initiated to provide emotional support consisted of verbal or physical activities. Verbal activities consisted of: listening to the patient talk, explaining an illness or treatment, advising on personal matters and diverting the attention of the patients from themselves to other matters. Those activities classed as manual or physical in nature were: providing physical care for the patient, providing extra service, giving food and staying with the patient. Most of the activities utilized by patients were verbal in nature. The students who had completed a course in psychosomatic nursing reported using more nursing activities per patient than those who had not.

Wiesbrook (1960) conducted a study of recovery room experiences in selected technical nursing schools. A combination plan of using both block-time and total care assignments was most commonly used. Also reported was the number of schools which used either the block assignment plan or total care plan and the year during which the students had recovery room experiences.

Miller *et al.* (1966) stated the usual professional nursing education program does not prepare nurses adequately for work in skilled nursing homes. They found that the nurses in such positions must assume much more responsibility for patient activities and services than nurses in short term general hospitals. These authors recommended an affiliation in a nursing home as part of the basic nursing preparation. They also suggested areas of needed clinical research in long-term nursing care problems.

Elmore (1964) studied the need to select and organize learning experiences for nursing students in the care of older patients. She interviewed nursing students from baccalaureate, diploma and associate degree programs; nursing instructors from each of these types of programs; and graduate nurses considered to be experts in their field. Her concern was to elicit opinions and perceptions from the respondents on problems encountered by students and professional nurses in caring for older patients, and to ascertain ways by which these problems might be solved. Her conclusions were that the geriatric nursing aspects of the nursing curricula received little attention in the total planning and evaluation activities in those schools participating in the study. One of the main problems identified was the attitude of nurses toward the aging and aged persons.

A study to measure the effects of group counseling programs for first-year associate degree nursing students was conducted by Meyer (1963). The content included the portion of the curriculum on working with disabled patients. It was proposed that, through a regular program of group counseling, the experimental students would form more positive attitudes and show greater improvement in clinical performance than would students involved only in the regular aspects of

a nursing curriculum. Meyer reported the control group showed no significant difference in their attitudes or in clinical performance following study of this area. The experimental group, who participated in the counseling sessions in addition to the regular curricular activities, were found to have more positive attitudes than the control group; but there was no change found in their clinical performance.

A study by Metz (1964) reported the development of a standardized test of the cognitive aspects of efficient body motion for technical and professional nursing students. The author developed and established norms for a paper and pencil test.

Brim (1967) reported a study of diploma programs to obtain data on transfer practices. From the questionnaires, it was found that 29 percent of the schools reporting accept transfers from the three basic programs, 45.6 percent accept transfers from one or two, and 25.4 percent accept no transfers. It was found that when transfers were not accepted it was due to variations in curricula, work involved in evaluating transfer students, and the academic and personal problems of the transfer students. In some institutions faculty attitudes toward transfer students were in direct opposition to the stated policies.

Mohrdick (1967) investigated the reasons for variations in the number of units required for graduates of associate degree nursing programs in different junior colleges. The number of units ranged from 65 to 81 with a median of 74 units, which is considerably higher than the 60 units usually required in associate degree programs of other types. The largest group of nursing school directors queried indicated they might be interested in reducing the required number of units if possible and that some reduction had already occurred. Reductions were done mainly through integration of course content. The newer programs tended to require the lowest number of units.

Practical Nursing. With the exception of Wisconsin, the inclusion of mental health and psychiatric nursing in practical nurse education programs is rather limited and considerably varied. A clinical workshop and follow up conference, reported by Crawford (1967), were designed to promote improvement and expansion of mental health and psychiatric nursing instruction in practical nursing programs. The workshop participants prepared instructional materials and began implementing plans and procedures for integrating mental health and psychiatric nursing content into the curriculum. Five months after the workshop, trainees reassembled for a follow up conference.

In the previous section it was suggested that technical nurses need more study of, and experiences with, geriatric patients. Similar experiences are also recommended for practical nurses. A study by Rasmussen (1966) of the state-approved schools of practical nursing in the United States, investigated the extent of such activity. Although the vast majority of the 680 schools returning questionnaires have sections within their curricula which focus on the geriatric patient, only 37.8 percent of these programs had nursing experience with older persons in nursing homes as part of their planned clinical experience. It was Rasmussen's opinion that a sufficient number of practical nurses are being prepared and are qualified to work effectively with older persons. This opinion, however, could be challenged depending on how "being prepared" is defined.

Other Health Occupations

Kinsinger and Ratner (1966) did a study which included the identification of appropriate curricular patterns for health career programs. In the first phase of this project the authors conducted statewide studies which involved medical and dental groups, educators, paramedical practitioners and health service technicians in the development of curriculum guidelines. The following areas were studied and curriculum guides developed: X-ray technician, inhalation therapy technician, dental auxiliary, medical records technician, occupational therapy assistant, biomedical engineering technician and emergency medical technician.

Love (1968) reported a study designed to develop a complete curriculum in the area of medical records technician. He included the courses which would best prepare the graduates for maximum efficiency in the field, specified the general education requirements accepted by most colleges, and indicated the desirability of having these programs operated through the two year community college. In a similar study, Gunning (1968) reported the development of a curriculum for dietary technicians. She reported the labor market need for such individuals, described a program which might be used in preparing them, and stated that Seaton Hill College of Greensburg, Pennsylvania and Pittsburgh Hospital of Pittsburgh, Pennsylvania will jointly sponsor the first such program.

Carlson and Lepak (1963) studied the needs for radiological technicians and developed a recommended curriculum for training them. They indicated that the preparation of radiological technicians should not be the first segment of an existing engineering or scientific baccalaureate program. They recommended 60 hours of course work with summer on-the-job experience to follow the second semester.

The suggested curriculum emphasis for biomedical equipment technologists was reported in a study by the Technical Education Research Center (1967). The course content is largely electronics, with a strong emphasis on medical instrumentation. A course on biomedical equipment techniques was the prime ingredient of this program which prepares the already proficient electronics technician as a biomedical equipment technologist.

In a study reported by the California State Department of Education (1966), 22 of the 26 dental assisting programs operating in the junior colleges of California were studied for the content included in their curricula. The study presented a breakdown of the average number of hours spent in the various areas of the programs. Hurteau (1966) reported a survey of the present and potential use of the curet in dental hygiene education programs. Although her concern was primarily with hygiene programs at the professional level, her findings, which indicate that use of the curet should be included in hygiene education, seem to be applicable to programs preparing personnel at less-than-baccalaureate level also.

The Core and Ladder Concepts

One of the most popular topics in health occupations education is the possibility of developing the "core concept." As educational institutions develop multiple programs in health occupations, they see commonalities in the curricula and look to the desirability of combining certain aspects of these programs to provide better and more economical course offerings. Another frequently

discussed topic that can be considered a subset of the core concept is vertical mobility, or the "ladder concept." Training for individuals in vocational programs is planned so that trainees will not necessarily end up in dead-end positions.

Just as commonalities across several health occupations will be identified for core courses, so will commonalities between levels within a field. The development of the core concept would ideally follow a systems approach and probably include: a complete analysis of each occupation; the writing of the behavioral objectives which the student must achieve; the identification of commonalities both horizontally and vertically; and the establishment of modular units of educational experiences, of which some would be in common with other programs and some would not. The core approach should not only prove to be more efficient, but it has the possibilities of providing much better education for all. Once the core approach is in operation, it should be possible for the worker prepared at the one-year level to gain the two-year associate degree by successfully completing those modular units he has not yet taken. This might require more than one year, but should not require two years. The core concept therefore can encompass commonalities both across programs and between levels.

Within the health occupations education field there are no fully operational core programs, but there have been studies done in this area. One such study is that of Fullerton (1966). The objectives of this investigation were to identify courses common to two or more of the various paramedical education programs being researched and to determine the nature and extent of such commonalities insofar as they might help the investigators suggest guidelines for the integration of some parts of these paramedical education programs. The project included a workshop in which 24 paramedical educators in the Phoenix metropolitan area were brought together to review curriculum materials for 20 paramedical careers from 126 educational programs and 110 separate institutions throughout the United States. Computer printouts were made of the 20 careers studied and courses required for each career. As considerable variations were found in many of the same courses offered by different institutions, the 2613 course titles were reduced to 126 subject classifications in order to identify general commonalities among the programs. Of the 126 subject classifications, 78 were common to two or more paramedical education programs and 12 of the 20 programs had a high incidence of commonality. Those programs requiring higher levels of skills and knowledge had a higher incidence of commonality. The results of this study indicate that curriculum developers can surely combine forces, classes, faculty, facilities and materials for efficient and economical programs. It will be necessary to precisely identify behavioral objectives and the relationships between required educational programs and actual job experience. The particular study was somewhat limited in identifying specifics because of the broad-range approach used to cover a wide variety of programs. As the core concept is examined in more depth it will probably be necessary to study the commonalities between small groups, or pairs of programs. Also, it is most likely that commonalities will be identified in experience blocks smaller than the traditional course subjects.

Following the pattern of the preceding study, Killen (1967) studied supportive personnel in health occupations for the American Rehabilitation Foundation. Commonalities in programs to prepare occupational and physical therapy assistants were examined. Although the data were limited by the number of programs, certain commonalities were found in the preparatory programs for these personnel. This would suggest the desirability of locating such preparatory programs in the same institution and developing common core courses.

As a part of the Community College Health Careers Project of the New York State Education Department, Kinsinger and Ratner (1966) reported efforts to develop a core curriculum for the health field. They presented a pattern for a common first semester to be taken by all health technology students. The program of studies includes courses entitled Human Anatomy and Physiology, Psychology or Sociology, Language Arts, Mathematics or an elective from general education, and Basic Health Technology. The latter course introduces students to a variety of career opportunities and assists them in selecting one appropriate to their interests and abilities.

Davis (1965) conducted a study in which one of the primary objectives was to identify common areas of skill and knowledge leading to the establishment of core curricula in a group of specialty health occupations programs. The final report has been written and is soon to be published.

A study in progress by The Research Foundation, City University of New York (1968) is working to determine ways and means of facilitating both horizontal and vertical mobility within New York City's health services administration and selected private hospitals. Rather than working within an educational institution to find commonalities in preparatory programs this project is dealing with jobs in city hospitals and is helping to upgrade employees. Families of skills will be identified and the appropriateness of job structures examined. Once the commonalities are identified and the system operative, employees can be appropriately moved between jobs or jobs redesigned to reduce vacancy pressures. Under this system, formal education is to be available to workers during their work life, in sequences linked with job requirements, rather than before entering the labor force or while on leave from it.

The majority of those individuals enrolled in a practical nursing program may not be capable of succeeding in a technical nursing program, as is suggested by a study done by the Oklahoma State Board of Vocational Education (1967). But, if these two programs were located in the same institution and a core of courses developed between them, this would facilitate vertical mobility for those practical nurses who are capable and who have such an interest to discover this at an early date.

Houser (1961) did a study of the attitudes and opinions of licensed practical nurses and practical nursing students. Although the subjects were proud of their chosen occupation—practical nursing, many felt that they did or could equal the registered nurse in matters of judgement, responsibility and work performance. Many of the practical nurses and practical nursing students showed strong desires to advance so as to someday equal the registered nurse both on an academic and status level.

In a study of practical nurses in New York City by Gilpatrick (1968), an overwhelming percentage was interested in studying to become registered nurses. Those interested were generally more qualified and promising candidates in terms of age and education than those who expressed no interest. Also, those who were interested were more willing to contribute their time to the training process. These individuals usually have financial obligations which will not permit them to stop working to reach the registered nurse level, although they could work at a reduced income if tuition costs were covered.

The commonalities between educational programs appropriate to these two levels of nursing discussed in this chapter are augmented by Stenner (1960). Associate degree and practical nurse education may well be a fruitful area for the development of the core concept.

EDUCATIONAL PROGRAMS

Included in this chapter are those studies which describe, compare, or propose the establishment of health occupations education programs.

Post High School Level

Nursing

Technical Nursing. Montag (1959) described the establishment of educational programs designed to prepare associate degree nurses to function at the semi-professional or technical level. The project reported was essentially a curriculum study; and, though it was conducted prior to the time period generally being covered by this publication, it is included because it is historically significant and it led to the establishment of many associate degree nursing programs. Seven pilot programs in associate degree nursing were established as part of the project. Appropriate data were gathered both when the students entered the programs and just prior to their graduation. The results of licensure examinations and ratings of the performance of graduates were also obtained. Montag concluded that the nurses prepared in these programs were able to pass licensure examinations and perform the functions expected of registered nurses. She further indicated that programs to prepare associate degree nurses can: be operated as an integral part of junior or community colleges; attract sufficient numbers of student applications; be adequately financed in junior or community colleges; and establish relationships to use the facilities of hospitals and other health agencies to provide learning experiences for nursing students.

Henderson (1962), in a study of West Virginia, and Torres (1965), in a study of Puerto Rico, examined the need for and possible establishment of preservice nursing programs. Both found an inadequate supply of nurses being prepared and proposed the establishment of nursing programs, primarily at the associate degree level. Henderson also presented guidelines for the development and expansion of such programs.

A master's thesis by Griffin (1962) and one by Pickel (1965) provide general information on the establishment of associate degree nursing programs in

particular institutions. These reports might be of assistance to other agencies in developing nursing programs.

The W.K. Kellogg Foundation supported a five-year project to establish and evaluate associate degree nursing programs and to prepare nurse-faculty members for them. The results of this study are reported in a book by Anderson entitled *Nursing Education in Community Colleges* (1966). This project included grants to nursing programs in the States of California, New York, Texas, and Florida. Anderson described the initiation of this project, presented case histories of the programs in the four participating states and discussed the results of the project. Kinsinger (1964) reported the activities conducted in New York as part of the overall project.

The movement proposed by the American Nurses' Association, in their position paper on nursing education (1965a), was an increase in the number of associate degree nursing programs and a reduction of the number of diploma nursing programs. An outspoken opponent of this change has been Hale (1967) who criticizes academically oriented two-year nursing programs, charging that they do not prepare nurses who can function competently at the time of their graduation. He further contends if the associated degree graduate is required to complete a year of internship following graduation, as in the case in some states, this defeats the purpose of establishing the associate degree programs.

Most associate degree nursing curricula are two academic years in length and provide for one-half of the courses to be taken in the area of general education and one-half in nursing education. Some nursing educators question whether this one-to-one ratio of general education content to nursing content is appropriate and suggest that greater emphasis be placed on the latter.

A rationale and suggested guideline for establishing and implementing a new approach to educational programs in associate degree nursing has been presented by Kerr (1967). The curricular content for this "definitive program" is directly related to the primary objective of producing graduates who are prepared for immediate entry into employment. The suggested curriculum for this vocational-technical education approach provides for a greater proportion of nursing content and practice than is found in academically-oriented associate degree programs. Provisions are made for general education components; but time is saved and, hopefully, the amount of learning increased by planning courses to include selected content in those disciplines which have relevance to nursing. An example of the selective approach is an integrated science course which covers only those areas of chemistry, biology and physics that have direct application to nursing.

The curriculum proposed by Kerr is designed to cover a period of twenty-two consecutive months, rather than the traditional two academic years. Additional time is gained through the inclusion of the two summer sessions. Although not officially designated as a research project, this approach has been implemented in the associate degree programs in the State of Iowa. To date no students have graduated from these programs, but studies are planned to ascertain the employment success of those nurses who have been prepared by means of this new approach to associate degree nursing.

The position of Catholic schools of nursing regarding the movement of nursing programs out of hospitals and into educational institutions was examined in two studies. From a review of nursing literature, Foley (1961) reported considerable resistance to, and fear of, change by many nurse educators in Catholic schools. The cause of this resistance was reported to be the absence of a system of Catholic junior colleges which, in *lieu* of hospital programs, could assume the responsibility for nursing education. Foley suggested that such a change may not mean the end of Catholic schools of nursing and recommended the establishment of a technical institute kind of program on a diocesan or regional basis.

Kramer (1962) found that associate degree nursing programs under public auspices were considered a threat to the survival of Catholic diploma programs in some areas. Her study did not provide enough evidence to justify a recommendation that Catholic leaders should or should not attempt to establish associate degree programs in nursing. Kramer did conclude, however, that hospital schools of nursing could not hope to maintain the status quo and still survive. An interesting sidelight to this study was the discovery that there was considerable dissatisfaction with programs which are designed for registered nurses who wish to obtain a bachelor's degree. Kramer sees a trend to reduce the amount of advanced credit allowed for associate degree or diploma nursing as being in direct conflict with the philosophy of advanced placement currently being emphasized in other fields by colleges and universities.

A report by Mercer (1966) documented some of the accomplishments of associate degree nursing programs in California. Guidelines were also presented for the establishment of new programs and the strengthening of those already in operation.

Several studies were found which made comparisons among nursing programs, students and graduates. Dustan (1963) compared the characteristics of students in three types of nursing education programs with the requirements and objectives of each of those programs. The diploma and baccalaureate students were judged to be appropriately matched to the curricula they had chosen. This was not the case with the associate degree students, who met the investigator's expectations for enrollment in a baccalaureate program. The associate degree students achieved the highest mean scores of the three groups on two measures of scholastic aptitude and had patterns of scores on a measure of values which indicated high intellectual and scholarly values. Dustan indicated the immediate plans of associate degree students were commensurate with the objectives of the program they had selected, but the students' long-range career plans included positions above that for which they were being prepared.

A study by Burke (1961) compared graduates of an associate degree nursing program with those of a diploma program. Although the two groups were comparable when they began their studies, the graduates of the associate degree program achieved significantly higher scores on the National League for Nursing Achievement Test and their state board examinations. According to evaluations done by their superordinates, the associate degree graduates also performed more effectively on the job.

Campbell (1961) found no difference in the measured mental ability of diploma and baccalaureate nurses. Although both groups rated higher on sociability than women in general, between groups there was no difference on this measure.

As indicated in the chapter on manpower, one possible source of additional nursing personnel is the large number of inactive nurses. There have been many programs designed to return nurses to the work force. Leparre (1966) reported a pilot program conducted by the Chicago Council on Community Nursing to bring retired nurses back into active nursing. As a result of this program, 77 percent of the 453 inactive nurses who participated in the refresher course were returned to an active status.

The Program in Health Occupations Education at the University of Iowa (1967) presented information on a project to reorient inactive nurses in which twelve-week courses were provided in ten locations throughout the State of Iowa. It was reported that slightly over one-half of the inactive nurses enrolled had returned to active nursing practice and that many others indicated that they planned to do so as soon as circumstances permit.

Kwolek (1968) reported a unique approach to returning nurses to active status which included the use of 25 videotaped lessons. One videotape was presented each day for five weeks and was supplemented with classroom work and planned practice in a participating hospital. The videotapes described in this project are available from the ANA-NLN Center for Video Tapes. Problems in the evaluation of this project do not allow for reporting its success or failure.

Practical Nursing. The National League for Nursing (1966a) conducted a study of practical nursing programs to find ways of improving educational programs. They found that there had been a continuing upward trend in the educational background of entering students, but that dropouts continued to be a major and costly problem. The study also raised questions regarding the varying length of programs; variations of from nine to 15 months existed within a single state. The report contains several suggestions which would be helpful in efforts to improve existing programs and/or assure that new programs are properly established.

Another examination of practical nursing programs conducted by Matthews (1962) provides a variety of information on the practical nursing programs in Tennessee.

Larson (1968) conducted a survey of high school level programs of practical nursing. She identified 68 programs and reported that there was a wide variety of approaches to offering practical nurse education in the high schools. In some programs the students completed the academic high school requirements in three years and the fourth year was an elective practical nursing program. Other programs had the students spend one-half of each day during their junior year in nursing theory and one-half of each day during the senior year in clinical experience.

An experimental program in practical nurse education reported by Edelson (1966) was designed to determine if "hard-core" unemployed men could be successfully prepared as practical nurses. Prospective trainees were given individual counseling by psychologists, and 20 men between the ages of 18 and 50 were admitted to the program. Only 14 students were graduated. Edelson discussed the difficulties encountered and made recommendations to be considered in designing other such programs.

Other Programs in Health Occupations Education

Considerable interest has been expressed in the preparation of nonprofessionals to go into a patient's home to assist in homemaking and health care duties. Programs have been developed to prepare such individuals under a variety of names, such as "homemaker-home health aides." Such curricula are composed of activities in the area of home economics as well as health occupations education. Homemaker-home health aide demonstration projects were reported by Grant (1966) and Hall (1966). Meyer (1968) conducted a summer workshop for the training of homemaker-home health aides, but the final report has not yet been published.

The education and training of dental laboratory technicians was the subject of a conference held by the American Dental Association (1966), the report of which could be of assistance to those interested in developing or improving such a program. A study to determine characteristics of students in two types of dental hygiene programs was conducted by Curl (1966). Findings were presented on: motivational factors; reasons for selecting a type of school; students' perception of their environment; and students' goals following certification. Comparisons were made between the students of those dental programs which were operated by dental colleges and those which were a part of junior or community colleges.

An experimental orthodontic technician training program was reported by Isaacson (1967). Two dental assistants were given specialized instruction for a nine-month period to prepare them as orthodontic technicians. Although little can be said based on the training of two individuals, the program was judged successful and it is to be repeated with a larger number of students.

Information on the establishment and management of an operating room technician training program is presented by Pendleton (1966). A wide variety of data were presented on the program, students, costs, and the problems encountered.

The U.S. Department of Labor, Manpower Administration (1968) reported efforts to prepare women classed as hard-core unemployed to serve in the medical laboratory assistant field. The Manpower Administration decided it would be advisable to train such students in already existing programs rather than to establish separate programs. The individuals were trainable, but the study found better orientation would be needed to prevent dropouts. Trainees of this type were found to require extensive counseling. The instructors were not prepared for this, nor were adequate referral facilities available.

Gunning (1968) presented information useful to planners of programs for dietary technicians. The first such program is in operation at Seaton Hill College of Greensburgh, Pennsylvania.

The feasibility of training nonskilled personnel to assist professional staff in the care and treatment of mentally retarded children was explored by the Retarded Infants Service, Inc. (1967). They held a 12-week training session to prepare such personnel, conducted job placement for the graduates, and did a followup study for evaluation purposes. Both the employing agencies and the trainees were satisfied that such personnel could be of considerable assistance in working with mentally retarded children. The study provides detailed information on the training program and placement activities.

Andrushko and Boardwell (1967) reported a program of upgrading instruction for adults as cooks, food service workers, and health aides in the field of long-term patient care. The researchers were successful in establishing relationships with nursing homes, and many employees received considerable assistance in preparing them for positions in nursing homes.

In some areas of the country there has been considerable concern about the quantity and quality of emergency medical transportation facilities. This concern has stimulated studies of ambulance services and efforts to upgrade ambulance personnel. A study by Shook (1966) reported the status of ambulance service in Iowa. Considerable information on the extent and limitations of ambulance services in that state is included with a description of a program to prepare ambulance-orderly personnel such as are being used in several hospitals in Iowa.

Information on developments and current programs to prepare mental health workers in community colleges were presented in a group of papers given at a conference called to discuss these issues, Pennigroth (1966).

From a sample of Illinois hospitals, Walter (1963) analyzed some common types of inservice training programs for various types of hospital workers and the extent of the use of such programs.

High School Level

In recent years considerable interest has been expressed in the establishment of more health occupations education programs at the high school level. As mentioned earlier, there have been practical nursing programs at the secondary level for some time, but this is not so with many other types of health occupations education programs. The present trend seems to be toward activities designed primarily to orient personnel to health occupations opportunities. Skill development, as an objective of such programs, is limited in scope and planned primarily for those who do not plan to obtain further education. Several reports of pilot projects of the career development or orientation type were found.

Union Grove High School (1966) has implemented a program in which high school students spend one semester with two hours per day of classroom activities focused on mental retardation and first aid. This is a three-year pilot program which is part of a statewide study involving 34 high schools, one with a

health occupations education program. Professional staff members of a mental health institute serve as lecturers and visiting consultants. During their second semester in the program the students participate in a cooperative training arrangement at the mental health institute, serving in assistant level capacities.

A pilot program for preparing health occupations assistants was reported by the Upper Bucks Area Vocational-Technical School (1967). Their goals were to: provide for the individual capabilities of students; prepare workers for health occupations; motivate students to continue their education in the health field; provide an incentive for withdrawal-prone students; and develop acceptable standards for, appreciation of, and some level of skill in the health occupations. A similar program for health assistants was reported by Compton (1967). Both of these reports provide course outlines and other materials helpful for developing such programs.

Health occupations education is included as part of a pilot project in career development being conducted by the Barrington Consolidated High School. Students enrolled are freshmen and sophomores who are unable to cope with regular academic programs because of reading difficulties. During their freshman year, students have orientation activities in the areas of health occupations, food service, distributive education, marketing occupations, business and office occupations, and technical occupations. In their sophomore year, students choose one of the above areas to study in some detail.

Josman and Thompson (1967) reported a pilot project to orient and recruit high school students for health and rehabilitation occupations. They conducted a one-day health careers conference at a hospital in which they involved a large number of students with experts in the rehabilitative field. This activity was followed by a six-week voluntary summer work experience for 120 selected students from the above group. The one-day conference stimulated considerable interest on the part of the participants and the summer activity was reported to have been very worthwhile.

The Pennsylvania Department of Public Instruction, Bureau of Vocational, Technical and Continuing Education (1968) reported that it is developing a variety of paramedical training programs at various levels which will include programs for high school students. Another on-going activity in the area of health occupations for high school students is a recently funded project to be conducted by Clark (1968), which proposes to develop educational programs at this level.

Carb (1968) reported on a project designed to assist high school junior and senior girls who wish to enter schools of professional nursing but lack the academic skills to do so. The girls spend eight weeks at a school of nursing during the summer followed by 31 Saturdays during the school year participating in a program of intensive remedial instruction, cultural enrichment, and organized social activities.

INSTRUCTIONAL MATERIALS AND DEVICES

Research in the area of instructional materials and devices for health occupations education has been rather limited. Only one study was found which attempted to ascertain the types of materials used by health occupations education personnel. This study, by Galloway (1965), included both methods and materials, thereby limiting the extent of the investigation of instructional materials. The most common materials used in the nursing programs studied were chalkboards, diagrams and films. Thirty percent or more of the instructors used models, slides, film strips and tape recordings. Instructors in associate degree and baccalaureate programs tended to use more instructional materials than did instructors in diploma programs. This is probably accounted for by the fact that these types of programs are located in educational institutions as compared with the hospital-based diploma programs.

Several studies have developed bibliographies or lists of available instructional materials. The Texas Education Agency compiled a bibliography of film lists and sources of teaching aids. Another study of this nature by Holloway and Rosendahl (1968) also provides a listing of sources, titles and types of instructional materials available for use in health occupations education programs. The Oklahoma State Board for Vocational Education (1964b) published a compilation of information on practical nursing programs which includes an extensive list of books and films which were being used in such programs. The Ohio State University (1967) has developed a listing, with descriptions, of instructional materials for industrial and technical occupations. Included are lesson plans, informative materials for instructors and assignment sheets for students. Some of the materials listed are for the health occupations education field.

The University of Rochester has compiled a bibliography on self-instructional materials for use in health care facilities. This extensive listing provides information on materials categorized as: general references, bibliographies, journals, articles on medical self-instruction, program units in medicine, articles on paramedical self-instruction, program units in program medical fields, and general programs in health sciences. As a part of a recently funded project directed by Barlow (1968), polysensory multi-media teaching materials will be developed for use in educational programs for 18 allied health occupations.

Several studies have had, either as their major goal or as part of their activity, the production of instructional materials for use in health occupations education programs. Two of these studies have developed films. A film entitled "Home Fires" was produced by Jacoby to be used as a training aid, an instrument for making communities aware of homemaker services, and a tool for recruiting candidates to the homemaker aides training program. In the dental field Kremenak (1961) developed a film to provide chairside assistants with a general orientation to the role of the assistant. A programmed course for nurses on the closed drainage of the chest has been produced by the U.S. Department of Health, Education and Welfare, Public Health Service (1965).

During a conference for practical nurse instructors, 32 lesson plans on the subject of mother and infant care were compiled by the University of Tennessee (1967).

LEARNING PROCESSES AND TEACHING METHODS

No health occupations education studies were found which examined basic learning processes. This should not be of any great concern because such studies are general and applicable to all fields of learning. Individuals who are interested in this particular area are referred to general studies which examine learning theories and processes.

The studies included in this chapter, all of which are in the area of teaching methods, have been divided into two sections. The studies reported first are those which have as their purpose ascertaining the types of teaching methods used. In the second section are those studies which examined a particular approach to teaching.

Methods Being Utilized

A study to examine the patterns of teaching medical-surgical nursing in diploma schools of nursing was conducted by Winkler (1963). Teaching methods being used were lectures, demonstrations, and patient-centered studies. The latter were found to be most frequently used. The use of programmed instruction was almost negligible. Also available from this report is information relating to the organizational structure of the programs, their objectives, how objectives are used, and the planning and distribution of medical-surgical nursing instruction over the three year program.

An investigation of the teaching methods and materials used by nursing instructors in three different types of programs was conducted by Galloway (1965). Instructors were found to use a wide variety of pedagogical methods. Also reported was information on the instructional materials used by the instructors.

Specific Methods

The remaining studies within this chapter explore particular teaching methods.

Programmed Instruction

A workshop on a multi-sensory approach to nursing education was reported by Folgueras (1966). The participants were given experiences in multi-sensory learning and explored materials which might be developed for use in this type of activity. With this teaching method programmed instruction materials were used, along with tape recorders and visual media.

Ideas and suggestions were solicited from workshop participants for incorporating these kinds of activities into the nursing program at Delta College, where, following the workshop a similar multi-sensory approach was implemented, at least to some extent, in the nursing program.

Another example of the multi-sensory, or audio-tutorial approach to teaching was reported by Deegan, Dieter and Voelker (1968). The subject matter for this project was an integrated science course in a hospital school of nursing. The weekly schedule for the course consists of two hours of lecture, one hour of conference, and a laboratory session which is worked out independently by each student. In this manner three science instructors teach 100 students. All laboratory work is accomplished by the audio-tutorial method, which permits students to progress at their own speed and places the responsibility of learning on them. Each laboratory is equipped with a tape recorder, an 8mm film projector, a slide projector, a microscope and other routine laboratory supplies. The results of this approach show a high interest level on the part of students, and the time required for laboratory activities has been reduced.

Krueger (1964) did a study which involved the development of a programmed instruction unit on hypodermic injections. The programmed instruction instrument was developed, piloted, revised and then administered to a group of nursing students. Following evaluation the following conclusions were drawn: (1) the program was effective in teaching most of the scientific knowledge and most of the motor skills intended; (2) the learning transferred to an actual nursing practice setting; (3) the program made possible individualized learning of a manipulative skill; and (4) there was need for revision of certain program frames and test items. This instructional method was rated as successful.

Another study involving the application of programmed instruction for nursing education was conducted by Hinsvark (1965). Programs were written following an identification of the knowledge and skills required, delineation of the characteristics and background of students, the formulation of specific detailed objectives, and the adapting of existing program techniques to find appropriate methods for this study. Programs were prepared involving three different types of learning tasks, expository materials, identification skills, and procedure skills. The programs were appropriately tested and revised following a pilot test. Hinsvark concluded that programmed instruction can be successfully used in nursing education if the learning tasks are clearly identified and if correct assumptions have been made about the students who will be using the programs. A saving of teacher time was effected and there was no increase in student time in using the programmed materials.

A programmed course in mathematics was used by Lipsey (1965) to improve the mathematical proficiency of a group of mathematically handicapped nursing students. This method was successful in as much as almost all of the students received passing grades. The improvement was produced with a minimum of assistance from the instructor. The flexible administration of the programmed course was beneficial both to those who preferred to work entirely on their own and to those who wanted assistance.

Successful experiences with programmed instruction in the nursing field are also shown by Seedor (1963) and Corcoran (1964). Both of these studies report students' reaching successful levels of achievement in shorter periods of time than with traditional instruction.

A publication by the Hospital Research and Educational Trust (1967) reported the use of programmed instruction in health care institutions.

Television

An interesting use of a closed circuit television system for an experimental approach to observing clinical instruction was reported by Griffin, Kinsinger and Pitman (1965). Fifteen television cameras were located in patients' rooms to provide a system whereby a single clinical instructor could monitor the activities of a group of student nurses. The experimental group was compared with a control group doing similar nursing activities but without the television monitors. A system was provided so that the clinical instructor could talk to the student nurses through a portable receiver and earphone, and the nursing student could talk to the clinical instructor through the intercom in the room. It was demonstrated that one clinical instructor, using closed circuit television and audio equipment, can supervise fifteen nursing students just as effectively as she can handle ten students through conventional methods.

Samis and Halpryn (1965) reported a study to improve the quality of patient care in New York City proprietary institutions, through use of a television-based training program for nurse-aides. Approximately 1400 aides employed in proprietary nursing homes participated in this activity. They viewed lessons on television, participated in discussions, watched demonstrations, and took self-evaluation tests. The findings indicate that the program was most effective for those aides who had the least amount of preparation and that two-thirds of the aides benefited to a significant degree.

Following a survey of diploma schools of nursing, Anderson (1967) revealed that, of the 492 schools which returned questionnaires, only 75 indicated they had television facilities available and were making use of them in their instructional programs. Of those responding positively, several reported projects representing cooperative efforts between community educational television stations and schools of nursing. A variety of general education and clinical nursing courses were being telecast.

Other

Bitzer (1963) conducted a study of self-directed inquiry in clinical nursing instruction by means of a sophisticated automatic teaching system. Use of the "PLATO-System," an automatic teaching system using a computer and a teaching carrel through which the student can "communicate" with the computer, was compared with a conventional classroom method for teaching a portion of the medical-surgical nursing unit in an associate degree nursing program. The primary purposes of this study were to determine the feasibility of adapting this subject matter to an automatic teaching system and to compare the effectiveness of the automated teaching program using an "inquiry approach" with a conventional classroom method of teaching. In the inquiry method students were presented problems, then required to decide on the kind of data they needed and allowed to work at their own rate to search for, organize, analyze, and synthesize these data to solve the problem. For the control group a

conventional type of classroom situation, basically a lecture approach, was used. Students were given pre-tests and post-tests; there was no significant difference in the factual knowledge achievement of the two groups. Other information was presented relative to other objectives studied.

The advantages and disadvantages of team teaching were examined by O'Laughlin (1967) through a questionnaire administered to team teachers in associate degree nursing programs. The teachers felt there were substantial advantages to the team method over the self-contained classroom. They indicated that team teaching was particularly advantageous in: improving communication between faculty members, providing an opportunity for faculty members to identify and relate various components of the curriculum, and in developing a clearer understanding of the necessary clinical experiences. The only problems encountered were feelings of insecurity by instructors teaching outside their specialty area and occasional problems related to cooperation between individual teachers on a team.

Two studies related to specific methods used in preparing psychiatric aides. Boehler (1964) conducted a study in which a representative sample of aides served as subjects for experiential teaching sessions. Three hour-long sessions per week were held for eight consecutive weeks. Tests composed of patients' statements to attendants were developed. The aides were asked to select from a list of five responses for each statement, each response representing possibly one of five categories: interpretative, supportive, avoidance, hostile, or punitive. The 60 statements prepared were broken into two groups, 30 being administered as a pre-test and 30 for a post-test. It was found that after the teaching sessions the aides decreased their number of hostile responses. Boehler also reported several interesting findings relative to how these aides perceived their role.

Isiyama and Hevitt (1966) reported a study in which psychiatric aides were subjected to various aspects of patienthood in an effort to increase their awareness of the patient's role. Twenty-three charge aides were put into voluntary seclusion for a one-half hour period. Such an action is used with psychiatric patients for punitive purposes. The records for one year preceding and seven months after the experiment were examined. There was a dramatic decrease in the seclusion rate of psychiatric patients immediately after the aides' experience in seclusion, but the rate gradually increased to the pre-experimental level by the end of seven months.

STUDENT PERSONNEL SERVICES

In recent years it has become common practice to establish a division of student personnel services within junior and community colleges. Such a division generally has major responsibilities in the areas of admissions, counseling and student affairs. Although the subjects to be covered in this chapter are not necessarily the sole responsibility of such a division, and although such divisions do not exist in all institutions, it seems appropriate that studies on the selection of students and on counseling and guidance be included in this section.

Selection of Students

Many studies were found which examined factors which might serve to predict the success of students in health occupations education programs.

Technical Nursing

Vosburgh (1965) examined high school achievement, standardized achievement test scores, motivation of students, and social background as measures for predicting success in diploma nursing programs. He presented evidence that intellectual variables were predictive of success in state board examinations. Of the other variables only some were of merit; of particular importance was the identification of weights to be utilized with intellectual variables in predicting state board examination scores.

A study by Tylka (1963) found positive relationships between pre-nursing test scores in arithmetical ability, nursing aptitude, and silent reading and the results of state board examinations. Perry (1964) found that state board examination scores below 500 can usually be predicted when students score below the 50th percentile on either standardized pre-entrance tests or the National League for Nursing's (NLN) Achievement Test in Nursing of Children. Gruendemann (1965) reported a study using the NLN Pre-Nursing and Guidance Test Battery and students' high school class ranks as measures for predicting successful graduation of nurses from diploma schools. Four of the eight sections in the NLN test-composite—quantitative, academic aptitude, mathematics and natural science—appear to be valuable predictors. High school class ranking was not found to be a clear-cut predictor of successful graduation.

A study of enrollment trends in diploma schools of nursing reported by McGrath (1966) indicated that academic failures accounted for the highest percentage of total attrition among enrollees in the schools studied, with marriage and family responsibilities being second.

Baise (1960), in a study of selected standardized tests as predictors of success in diploma schools of nursing, found the measures used were not helpful in differentiating between withdrawals and graduates of such schools. Standardized tests were found to have value in predicting results on state board examinations.

The use of the Iowa Tests of Educational Development (ITED) as a predictor of academic success in Iowa schools of nursing was examined by Litherland (1966). He found that the ITED does have some efficacy for predicting nursing school success, but that high school grade point average is a considerably more accurate predictor. The inclusion of the ITED in a multiple regression equation with high school grade point average does not significantly increase the forecasting power of the grade point average. A study by Hines (1961) found the value of high school grade point averages for predicting success in nursing and the size of the high school is of little significance.

Several studies have shown social values as being predictive of success in nursing schools. Mowbray and Taylor (1963) found that the social service scale of the Kuder Preference Record differentiated between the most and least adjusted groups and between those who remain in school and those who do not.

The nurse scale of the Strong Vocational Interest Blank was found to discriminate between those who remain in school and those who leave. Mowbray and Taylor suggested that the most important variable influencing adjustment to nursing school is the strength of the student's social service interest.

In a study on predicting success in nursing education by utilizing an interpersonal system of multilevel personality diagnosis, Gaza (1963) found that this system of using personality variables was not predictive of success.

Carlson (1967) conducted a study to find factors which would be predictive of success in an associate degree nursing school. Although some factors studied showed a low predictive value of occupational performance, most of the predictors used had no value. A multiple regression formula of the four variables which singly indicated the greatest amount of predictability (SCAT-verbal, prenursing grades, age, and high school chemistry grades) still only accounted for 35 percent of the variance. It should be noted, however, that in this study older students earned significantly higher scores on state board examinations.

In a survey of selection and admission criteria in relation to attrition rates of freshmen nursing students in educational programs leading to the associate degree, Thelander (1961) found that the attrition rate of those schools using general criteria for selection was higher than those using a selective admission criteria for nursing students. She found that 40 percent of these students withdrawing from the programs surveyed had withdrawn for reasons of academic failure.

In a long-range nursing career study, Tate and Knopf (1965) reported that 14,500 students who entered both the professional and practical nursing programs in 1962 will be studied in detail for a period of 20 years. This should provide considerable data pertinent to the area of student selection.

Practical Nursing

Studies by Meadow (1961), Kerr (1962) and Chirco (1963) all found that marital status and age relate positively to success in practical nursing. They do indicate that the very youngest and the oldest students have less chance of being successful but that up to age 50 the older students, particularly those who are married, are most likely to be successful.

A study by the Wyoming Research Coordinating Unit (1967) also showed that married students have the highest probability of graduating from practical nursing programs. Studies by Kerr (1962) and Malone (1965) showed that actual rank in high school class and grade point average are the best single predictors of success in practical nurse training. Bailey (1968), in a study of practical nurses, found grade point average to be significantly related to both classroom achievement and state board examination scores.

The studies mentioned earlier by Chirco (1963) and the Wyoming Research Coordinating Unit (1967) both indicate that students with IQ test scores below 100 are likely to have academic difficulty in practical nursing programs. McCormick (1966) reported a study which found the Nelson-Denny Reading Test, the Otis General Mental Ability Test (Gamma form) and the Minnesota

Multiphasic Personality Inventory to be useful in predicting success in practical nursing programs.

Other studies which present information helpful in selecting practical nursing students are reported by Barlow *et al.* (1959), Aubin (1960), as well as Engelhard and Washington (1965).

Nurse Aide

Though the three studies on nurse aides were concerned with selecting personnel for increased longevity and successful employment, the factors examined may also be of assistance in selecting personnel for educational programs. A study by Sprenger (1961) indicated that nurse aides within the 30- to 49-year-old range were more likely to be rated as excellent than were younger nurse aides, but that there was no great difference in the educational backgrounds between those rated as satisfactory and excellent. Nurse aides with longer employment records and middle-aged married women were most likely to have the desired characteristics of an excellent nurse aide. Similar relationships were found by Neumann (1964) who reports that those nurse aides in the 47- to 56-year age group tended to remain in their positions longer than those in any other age group. She also found no relationship between completion of high school and length of employment. Carr (1964) reported the tenure of nurse aides can be increased by selecting applicants who are single, have lived at their present address over a year, and who state that their present health is excellent. This finding regarding marital status is in direct contrast to the Sprenger study.

A study to develop a means of predicting job success for medical assistants was done by Ried (1961). Using continued employment in one office for a period of six months and a numerical score derived from a rating scale scored by physician-employers as measures of success, factors of personality, attitude, and skill traits were examined as measures of prediction. The best predictor of success was found to be a personal profile and inventory which identified the attributes of gregariousness, liveliness and the liking of people. It was recommended that these factors be considered in selecting students and also that consideration be given to such factors when developing curricula for medical assisting educational programs.

Characteristics of nursing home administrators and an indication of the operators' conception of themselves which might be of assistance in selecting individuals for preparational programs in this field are presented by Mahaffey (1961). Particular concern was expressed for the personal qualities of sympathy and kindness, love and understanding for older people, and patience.

Guidance and Counseling

Several studies indicated that nursing students have felt they did not receive adequate counseling prior to entering, and during, their nursing education program. Wagner (1961) conducted a study to determine the viewpoint of students who had withdrawn from hospital schools of nursing, regarding the guidance and counseling programs of their high schools and in their school of

nursing. The findings of this study indicated the need for more and better occupational information to be provided by both of these institutions. Wagner found that 60 percent of the nursing students had failed to investigate any other type of occupation and 40 percent were not aware that participation in this educational program would require study time beyond the regular school day. Fox *et al.* (1963) also reported that students with difficulties in nursing programs were not well informed about nursing school prior to entry.

A factor of particular concern to high school counselors in working with students interested in nursing programs was presented by Campbell (1961). She found that, although there were no significant differences between the intellectual ability of diploma and baccalaureate nursing students, most of the students in the hospital-based programs were unable to spend either the time or money to complete a four-year college training program.

A study by Ebert (1963) to ascertain whether experiences as a nurse aide are deemed advisable for individuals interested in entering a nursing school was not conclusive. Of the limited sample of nursing service directors surveyed, 55 percent felt nurse aide experience was not beneficial, 20 percent felt such experience was helpful and 25 percent were indefinite. It would seem to be ill-advised, therefore, to make recommendations either way on the value of such experience; but further investigation seems to be warranted.

A number of the studies presented in the first section of this chapter on student selection also contained information of value to counselors in assisting individuals interested in the area of nursing. An example of such studies was one conducted by Treece (1967), who examined factors relating to vocational choice and satisfaction of licensed practical nurses.

Findings from a study by Bailey (1968) could be of assistance to counselors in assisting potential practical nursing students. He investigated the vocational behavior of selected young women as they emerged through exploratory vocational life stages. His study was designed to apply vocational development theory to a sample of women enrolled in practical nursing programs. Bailey found that: students' previous exploratory vocational experiences were significantly related to the occupational field for which they were training; for this particular group their personal desire to help others was significantly related to their choice; and, students' reasons for selecting a particular program were related to reality factors such as the program being "close to home," the time of their lives at which the choice was made, and the fact that their friends were also enrolling.

An example of efforts to assist guidance personnel to be knowledgeable in the health occupations area was reported by Morgan (1966). He described an institute held for high school and employment service counselors to provide them with information and assistance on careers in the health field. A film was developed by Jacoby to assist in recruiting personnel for homemaker-health aide programs.

An example of one type of information which counselors need in order to be effective in assisting students is presented by Curl (1966) in a comparative study of dental hygiene programs in different types of institutions. There were some

differences found in the characteristics of the students and in the educational environments between dental hygiene programs operated as part of a dental college and those in junior or community colleges. These differences should be weighed by students so they may make the appropriate decision in choosing a school.

The kinds of problems which counselors face in keeping abreast of occupations is shown in a U.S. Department of Labor, Manpower Administration (1968) report on careers in the medical laboratory area. At present there are medical technology programs which do not include the earning of a baccalaureate degree as well as those which do. The programs to prepare laboratory assistants are generally one year in length, but there appears to be a trend toward two-year curricula. Such variables and the continual change caused by the rapid growth in the number of health occupations present real problems to those who are attempting to assist individuals in choosing careers in this field.

FACILITIES AND EQUIPMENT

Of all the studies reviewed, only one was found which made any reference to facilities and equipment. The Pennsylvania Department of Public Instruction (1968) has indicated that, as a part of their Research and Demonstration Proposal for the Pittsburgh Health Training Center, they plan to design exemplary classroom and laboratory layouts for their new institute building. In light of the rapidly growing number of programs in health occupations education and the knowledge that many community colleges are presently involved in planning for and constructing new facilities, it seems very unfortunate that research has not been done in this area.

TEACHER EDUCATION

Supply and Educational Preparation of Teachers

Just as the supply of teachers for health occupations education programs is limited, so are studies in this area. The studies which were found explored the supply and characteristics of teachers and these pertained only to nursing programs. The National League for Nursing (1966c) did an extensive questionnaire study of all types of nursing programs. This study presented data on full-time faculty on such factors as: level of program, highest earned credential, and area of teaching responsibility. Based upon data received, it was estimated there were 20,950 nurse-faculty members in the 2,560 programs throughout the country. It was also estimated that there were an additional 1,895 unfilled positions. For all nursing programs, including those preparing individuals at the master's and doctoral level, the percentage of full-time nurse-faculty members with differing levels of preparation were reported: master's and above, 36.6 percent; baccalaureate, 41.5 percent; less than baccalaureate, 21.9 percent.

The data on preparation of nurse-faculty presented in the above-mentioned study was corroborated by a doctoral dissertation by Schloemer (1967). In this

study the 469 faculty members in three colleges, 20 diploma schools and 16 of the 17 "associative units" in Wisconsin were reported as having levels of preparation similar to those reported in the National League for Nursing (1966c) study. Twenty percent of the Wisconsin nurse-faculty members were prepared at the master's level or above, 47 percent at the baccalaureate level and 33 percent at less-than-baccalaureate level. No direct comparison has been made of the percentages reported by these two studies because there are some differences in the make-up of the population, but there is enough similarity between them to verify the results.

Schloemer also found that full-time nurse-faculty members typically became interested in, and set goals for, their teaching careers and began teaching earlier than did part-time faculty. Younger full-time faculty members were found to prefer medical, surgical or psychiatric nursing; whereas the older instructors preferred public health or obstetrical nursing. It was reported that married faculty were less likely to hold an academic degree. Faculty members preferred to teach in the same type of nursing program in which they had been trained. The Wisconsin nurse educators reported that they more often became interested in nursing education by having been offered an unsolicited job than by actively seeking a teaching position. They were attracted to positions by considerations which related to subject matter, duties, and responsibilities, rather than by general institutional and community factors.

There has been considerable attention paid to the educational level which should be expected of faculty members in nursing programs. Many, such as Schmidt (1966) and the National League for Nursing (1968), have reported that a master's degree should be the minimum accepted credential for teachers of associate degree nursing programs. There is little doubt that preparation at this level is desirable. In all fields more preparation of faculty is desirable as we increase the complexity of content and the responsibilities which the trainees will be expected to assume. When we look at the present level of nurse-faculty preparation, the pressure to require master's degrees or above, and the great shortage of nurses, we find a real dilemma exists. The National League for Nursing (1966c) census showed that only 69.7 percent of the full-time faculty members in associate degree programs held the master's degree or above. Their report also indicated that 28.4 percent of such instructors held baccalaureate degrees and 1.9 percent had earned diploma or associate degrees. The shortage of nurse-faculty prepared at the graduate level was exposed even more when we found, in the same study, that graduate degrees were not held by: 7.1 percent of the full-time nurse-faculty of graduate programs, 14.7 percent of the regular baccalaureate program faculty and 29 percent of the faculty in baccalaureate programs designed specifically for the graduates of diploma and associate degree programs. If these higher level programs cannot attract enough graduate faculty members to serve their needs, how can we realistically expect the associate degree programs to do so?

About half of the respondents in a study by Rudick (1963) felt that pressures from universities are producing a trend toward longer preparation for teachers; whereas the other half felt that there was no need, or that it would be impractical, to lengthen the period of preparation.

Because of this shortage of highly prepared faculty members, the development and expansion of technical-level nursing programs have been curtailed. In an effort to ascertain whether there is a trend toward increased preparation of faculty members in associate degree programs, nurse-faculty census data for 1964 was examined by the American Nurses' Association (1965); it was found that 69.4 percent of full-time nurse-faculty members of associate degree programs held master's degrees or above. The statistic for 1966, reported earlier, was 69.7 percent. Based on this lack of an increase between the two years reported, one may conclude that it seems unlikely that a very rapid rate of growth can be expected in the next few years.

No dispute with the desirability of having highly prepared faculty is intended by the above discussion. It is felt that there is a need to take a realistic look at one of the greatest problems in nursing education today, the lack of faculty prepared at the graduate level. The need for quality educational programs has not been discussed for it is assumed that everyone is interested only in programs which will produce good nurses. With the demand as large as was indicated in an earlier section of this publication, the question arises: can we wait until greater numbers of graduate level nurses are prepared before expanding technical nursing programs? Since a relatively large percentage of those teaching in the technical level programs do not presently have degrees, it would seem that a major research effort would be desirable to ascertain whether faculty members without a graduate degree can in fact do a good job of teaching at the technical level. Which is the best graduate level preparation for a nurse-faculty member: clinical nursing, nursing administration, nursing education, a degree within the education department i.e., higher education; or is there any significant difference?

Educational Experiences

In the preceding section the supply and preparation level of faculty were considered. This section reports on studies designed to discover the characteristics of exemplary health occupations education teachers and the types of educational experiences needed to prepare such personnel.

White (1961) conducted a study to ascertain the abilities needed by teachers of university and community college nursing programs. She interviewed 33 faculty members at seven colleges in six states. Her conclusions were that the functions and responsibilities of the nurse teacher are the same as those of any other instructor, with an additional responsibility of the extended campus used for the clinical practice. It was felt that the nurse instructor must be an expert practitioner, be skilled in the techniques of interpersonal relations and teaching, and have a broad general education background. White concluded that the individuals teaching in the programs studied were not well prepared in the previously mentioned areas. The chief administrators and nursing administrators of the programs studied indicated that the major problems were a lack of knowledge in the area of teaching methods and the teachers' lack of ability in

the area of interpersonal relations. The instructors themselves identified their problems as lack of time, lack of criteria for selection of learning experiences, and insecurity in classroom interpersonal relations.

The critical incident technique was used by Farley (1967) to discover requirements needed by teachers in associate degree nursing programs. In this study, student nurses were asked to report effective and ineffective teaching behavior which they had personally experienced during their educational program. In the reporting of results all incidents were referred to in a positive form. There were found to be three major groups of behaviors. Within the first group, which indicated specific teaching behaviors involving students, particular concern was expressed for the teacher's being: (1) available when needed, (2) able to assess the situation immediately and give appropriate support, (3) able to create a learning environment in which the student might be comfortable and (4) able to assume the role demanded by the needs of patients. In the second group, specific teaching behaviors involving the implementation of learning theory which students felt were important for effective teaching were: (1) the reviewing of procedures before proceeding to the bedside, (2) the setting of realistic goals, and (3) the ability to teach a skill and concept at the same time. The third group of behaviors were those involving evaluation practices and included the teachers' (1) ability to use appropriate praise accompanied by meaningful suggestions, (2) making expectations clear to the student, (3) realizing self limitations, and (4) having the ability to give immediate and appropriate assistance in correcting defects without critical overtones.

Sharp (1965) conducted an investigation of the effectiveness and ineffectiveness of teaching methods in diploma schools of nursing. Although reported as a study of teaching methods, this was in fact a study of teacher effectiveness and is therefore most appropriately included in this chapter. Teachers demonstrating effective actions, as observed by student nurses, were those who: (1) came immediately to the aid of students having difficulty in the clinical area; (2) showed interest in the course, were well-informed, and had well-planned lectures; (3) counselled students privately in the office, and (4) used a positive approach to student error. Those who were identified as being least effective, or ineffective: (1) negatively reprimanded students; (2) were poor in their delivery of lectures; (3) failed to answer questions; (4) gave inadequate explanations; (5) used restrictions as punishment; (6) assigned excessive outside readings; and (7) attempted to supervise procedures without having sufficient knowledge and practice in them. Sharp noted that students are very aware of teaching effectiveness and that they consider a reprimand in the presence of others as the greatest single factor in contributing to ineffectiveness.

In a study by Rudick (1963) proposals were made for the preparation of teachers of nursing in community junior colleges. This study was based on information obtained from directors and faculty of accredited master's degree programs preparing teachers of nursing. Rudick recommended that all programs preparing teachers for nursing should include content relating to associate degree nursing programs but that not all master's degree programs should offer

preparation for teaching. It was also suggested that admission to master's degree programs should be preceded by experience in bedside nursing. Dunlap (1964) also found a definite need for special preparation of faculty for associate degree nursing programs.

The need for professional laboratory experience in programs preparing teachers of associate degree nurses was explored by Yaczola (1964). Teachers of nursing in associate degree programs and graduates of specially designed teacher preparation programs were surveyed. They recommended that professional laboratory experiences be included in teacher preparation programs.

Another study of the needs of community college nursing faculties was done by Kinsella (1967). This study indicated there is no unanimity as to the role of nursing instructors in community colleges. The administrators indicated their faculties encountered a wide variety of instructional problems, the most important being a lack of understanding concerning the philosophy and objectives of the community college. These misunderstandings were apparent in specific problems reported in the areas of evaluation, selection of content, choice of learning experiences, and definition of competencies to be achieved by students. The nursing faculty reported appropriate selection of content and difficulties in evaluation as their most difficult problems. The instructors indicated that nursing administrators were their greatest source of help, and department meetings were of considerable importance in working out their educational problems. They voiced the need for more comprehensive orientation upon entry to their position.

In a study of the orientation needs of instructors in associate degree nursing programs Birmingham (1967) surveyed 33 directors and 165 instructors in 42 schools. She indicated that the instructors considered orientation programs to be of great value but that present orientation programs were not meeting their needs. There was a wide variety of needs expressed, but this was accounted for by the diverse backgrounds of those surveyed. This study seemed to show a definite need for giving attention to the individual instructor and adjusting the orientation program to meet the instructor's individual needs. A need for a planned followup to determine if the instructor had become thoroughly oriented to her position was also stressed.

A study of diploma nursing schools by Barrows (1962) investigated problems, encountered between personnel in nursing education and nursing service, which arose in the planning of educational experiences for students. The study indicated agreement by both groups that such problems do exist. The most frequent problems were those of interpersonal relationships between the two groups, difficulties in assigning and scheduling the nursing student activities, lack of understanding of the philosophy and objectives of each group, lack of adequate communications, and lack of sharing in the areas of responsibilities for the nursing student by each group. It would appear that the major problems were communication between the two groups and lack of general agreement whether the supervision of student nurses was the responsibility of the supervisors and/or the head nurses.

Team teaching is being used in some nursing programs and its popularity may be expected to increase. O'Laughlin (1967), in a study of areas of satisfaction and difficulties experienced by team teachers in associate degree nursing programs, found that this form of instruction was certainly satisfactory but that problems can exist. It seems advisable, therefore, that preparation for this type of activity be included in teacher education programs.

Kinsinger and Ratner (1966) presented some suggested guidelines for teacher education programs as developed during Phase I of the Community College Health Careers Project. During Phase II, two university centers were to establish educational programs for preparing health occupations education teachers.

In the studies reviewed there are no reports that faculty members are not sufficiently prepared in their health specialties. There is considerable evidence that they are lacking in pedagogical preparation. The question arises as to how these teachers, or prospective teachers, will be prepared. Presently the vast majority receive no preservice teacher education. They must depend upon assistance from administrators, fellow staff members, extension courses, and short-term workshops. There are a few programs specifically designed for preparing health occupations education personnel for teaching, but many of these programs are in their formative stages and could not possibly prepare all of the instructional personnel who are needed even if they were operating at full capacity.

Preparatory programs in the nursing field present a particularly unusual situation. The two-, three- and four-year programs prepare nurses for the same entry-level nursing activities. With the exception of the baccalaureate nurse who is prepared to become a team leader, it is the position of the nursing profession that without further preparation, these nurses should not function beyond this entry-level. This position is taken despite a great deal of evidence such as has been presented elsewhere in this publication, that in fact, nurses at all levels are functioning beyond the level for which they were prepared. The question is whether nurses should be prepared to function in the roles which the profession sees as being the most desirable or whether they should be prepared to do the job they are being expected to do in actual practice. This incongruity between the preparation and actual role of nurses is of considerable concern in the area of teaching. Although not prepared to teach, nurses at all levels are moving into teaching positions. This is particularly true of the baccalaureate nurse.

Some programs prepare teachers at the master's level but many advocate that this advanced level of preparation should be in a clinical field and that teacher education should take place at the post-master's level. This points out, as did the analysis of the previous section, the need for a more realistic look at the preparation of teachers in the nursing field and suggests implications for the other health occupations education fields as well.

Teacher Education Activities

The studies reported in this section are primarily short term activities designed to provide assistance to teachers in meeting their immediate needs in teacher education. Most of these projects were supported by the Division of Vocational and Technical Education, U.S. Office of Education.

An extensive action research activity was conducted by Brown and Barlow (1964) to improve instruction in practical nursing programs. Small group conferences consisting of from four to eight persons were held for a period of two weeks. The first half of the workshop focused on acquiring understanding and knowledge; the second, on utilizing this understanding and knowledge as a basis for planning learning experiences and developing curricula. Each workshop day was divided into clinical experience, ward conferences, and seminar sessions. In the clinical experience situations trainees were assigned patients; during the ward conference they discussed their problems in the clinical experience. In the seminar sessions they discussed topics parallel to their clinical experiences, such as: the student, the licensed practical nurse, learning experiences, curriculum construction and evaluation. The workshops were judged to be successful and it was felt that their design provided an effective means of inservice education for vocational nursing instructors. It was recommended that the participants of each group should not exceed eight, though this does present a problem in terms of reaching all nursing instructors. During the year following each workshop the trainees reported that the experiences of that activity had caused them to make important modifications in their curricula. After the workshops, trainees expressed increased understanding of their need for educational preparation in order to function more adequately as nurse educators.

Lawrence (1963) reported a three-day workshop activity for teachers of vocational nursing. The topics considered were selection of students, teaching techniques, program evaluation and curriculum implementation. A group of 93 teachers participated in discussions and listened to panel presentations on a variety of problems.

Sometimes it is difficult to differentiate whether short-term activities—workshops, institutes, seminars and the like are research. Of two activities which may seem identical in purpose and conduct, one may be funded as a research activity and the other not. An example of an activity not conducted as research was a workshop for practical nurse educators which was reported on by the State of Illinois, Board of Vocational Education and Rehabilitation, Health Occupations Service (1967). This three-day workshop, which was primarily concerned with test construction, is included as an example of the type of activity which, though not funded as a pilot project or other research project, is very similar to some which are classified as research.

Another workshop funded as a research project for practical nurse educators was specifically designed to explore mental health and psychiatric nursing. During this project, reported on by Crawford (1967), 31 nurse educators from schools of practical nursing worked with three psychiatric-mental health nursing specialists and three clinical instructors. The trainees participated in staff conferences, were assigned clinical practice with patients as well as group and individual instruction in mental health and psychiatric nursing knowledge and skills, attended lecture-discussion sessions, and went on one field trip. During the workshop they began implementing plans and procedures for integrating mental health and psychiatric nursing content into their curricula. They also prepared

appropriate instructional materials. Five months after the workshop the trainees reassembled for a followup conference. The trainees, faculty, and members of the planning committee recommended that administrators in mental health agencies and vocational education programs work together to: (1) assure instructors of their willingness to support and assist with instruction in mental health and psychiatric nursing in practical nursing programs, (2) provide continuing information about employment opportunities in this area for licensed practical nurses, (3) provide assistance with educational programs to update the preparation of instructors of practical nursing in mental health and psychiatric nursing, and (4) assure employment of consultants and faculty to plan appropriate content and teach mental health and psychiatric nursing to practical nursing students.

Lewis (1960) reported a project conducted for nurses involved in teaching psychiatric aides. The purpose of the two-week seminar was to increase the nurses' understanding of mental patients, improve nursing care and encourage new approaches to teaching aides. The trainees worked directly with patients and participated in both group and individual discussions. It was felt that the most outstanding positive result was the nurses' increased self-confidence. A followup indicated that individualized interest in patients increased, fear of interaction with disturbed patients decreased and that organizational and *milieu* improvements geared to more vital patient care were initiated following the seminars.

A two-week workshop to prepare faculty for associate degree nursing programs was conducted by The University of Florida (1965). Their goals were to provide new faculty members with an orientation to the junior college philosophy and to associate degree nursing.

As an increased range of health occupations education programs are developed, institutes and workshops are being offered in a variety of careers. Institutes are also planned to accommodate a variety of health occupations instructors in a single setting. Couch (1968) reported a pilot program for teacher education personnel in medical laboratory programs. A planning committee brought together specialists in the education and scientific disciplines to devise an activity which would meet the needs of teaching personnel. The pilot institute was held and evaluated. Based on the planning committee's activities and the results of the institute, a suggested curriculum and agenda was disseminated for use by others interested in conducting such activities.

Several pilot programs have been held to develop and test programs for teachers in the dental field. Cavanaugh (1966) reported a four-week program held at Detroit University for 20 participants who planned to teach in new dental assisting programs. The program was divided into two major sections. The first section was devoted to preparation in selected areas of professional education deemed essential to successful teaching. The remaining portion of the program was related to the role of the teacher of dental assistants in directing a school for dental assistants and was comprised of such activities as developing curricula and coordinating the total program. Evaluation measures were utilized

at the beginning and end of the training and the results indicated there had been growth in knowledge and skills on the part of trainees.

An institute similar to the one above was conducted at the University of North Carolina. Barton (1966) reported that the two institutes followed the lead of a program held at the University of North Carolina the preceding year.

During a three-day workshop described by Hord (1967) dental hygienists were given upgrading experiences in current preventive techniques. Instruction included both theory and clinical practice.

Holloway (1968) conducted an institute designed to provide a variety of health occupations education instructors with a short-term intensive teacher education program. The activities of this institute were geared toward achieving the following objectives: (1) making decisions based upon knowledge of the learning process, (2) writing and using objectives stated in behavioral terms, (3) selecting appropriate types of learning experiences, (4) doing effective lesson planning, (5) becoming familiar with a variety of instructional methods, (6) making effective classroom presentations, (7) becoming familiar with a variety of instructional media and (8) constructing valid classroom tests. A number of instructional methods were used, including micro-teaching presentations and "packaged" instructional units. The institute evaluations indicated that the activity was highly successful.

Micro-teaching is becoming quite popular as a teacher education technique. De Tornyay and Searight (1968) reported the successful use of micro-teaching with videotape recording in their program for preparing nursing instructors.

ADMINISTRATION AND SUPERVISION

The studies appropriate for inclusion within this chapter were primarily in the area of program planning. No studies were found which pertained to supervision in health occupations education programs.

A conference on paramedical education, which explored a number of questions relative to junior college programs, was reported by Skaggs (1966). Discussions involved such topics as: determining needs, curriculum development, financial problems, setting standards, and obtaining qualified personnel.

Kahler *et al.* (1967) has written a guide for establishing health technology programs. A series of activities were discussed which can be of assistance to administrators in developing health programs for junior or community colleges.

A seminar on health occupations education centers was reported by Nangle (1967b). The purpose of this seminar was to assist leadership personnel to promote, establish, enlarge, and modernize programs for preparing health manpower. A variety of approaches to the organization and operation of health occupations education centers were presented and discussed.

Mercer (1966) reported the accomplishments of associate degree nursing programs in California during the years 1953 to 1965 and also provided guidelines for use in establishing new programs and strengthening existing ones. In a report tracing the development of a nursing program for a selected community college, Griffin (1962) provided information which might also be helpful in planning a technical nursing program.

The National League for Nursing (1968) held a conference to provide the participants with assistance in the initiation and operation of nursing programs in institutions of higher education. Topics discussed included: faculty qualifications, use of media, clinical facilities, and accreditation. In another publication of the National League for Nursing, Cafferty (1960) reported the role of the nursing administrator in community junior college programs. This report provides the nursing administrator with an over-view of the job of an administrator in an associate degree nursing program.

Kinsinger (1964) reported a five-year project to promote the sound development of associate degree nursing programs in New York State. Activities included consultation; developing demonstration centers; planning and activating new programs; and, in cooperation with Teachers College Columbia University, the preparation of teachers and administrators for community colleges. Described in some detail were a number of specific studies of teaching methods conducted as a part of this project. The author also provided comparative analyses of the planning processes and program characteristics of associate degree nursing programs in New York State.

Schmidt (1965) conducted a study of the factors which have led to, or deterred, the establishment of associate degree nursing programs in community junior colleges. She stated that the two most discouraging factors relative to the initiation of associate degree nursing programs were the projected cost of such a program and the already overtaxed college physical facilities. No substantial differences were found among colleges which had decided not to establish a nursing program, which were still considering its establishment, and those which had established a program. Schmidt indicated that the quality of administrative support appears to be a hidden factor which greatly influences successful establishment of associated degree programs in community colleges.

The University of the State of New York (1968) conducted a study on the migration of students in professional nursing programs in that state. Such data may be useful to administrators and those interested in regional planning for nursing education.

A six-year study of the cost of nursing education in diploma, associate degree, and baccalaureate degree programs was conducted by the National League for Nursing and was reported by Rowe and Flitter (1964-1965). Cost analysis methods were used to examine the operating expenses of each institution for one year. The results were published in two volumes. The first volume contains information on the cost of diploma programs and the second volume, the cost of degree programs. Distributions of various types of cost data were given for 126 diploma, 21 baccalaureate and 10 associate degree nursing programs. Cost factor comparisons were made within each type of program but not between types of programs.

Bowen (1962) reported the development of an administrative framework for a school of practical nursing designed especially to prepare practical nurses for the mental health area. It was felt that vocational education- and hospital-controlled schools were either unsuitable for preparing or unable to prepare licensed practical nurses for the field of psychiatric nursing and the nursing of

the retarded. Therefore, the Massachusetts Department of Mental Health School of Practical Nursing was established. The report outlined the procedures and administrative development of this educational system.

EVALUATION

Program Evaluation

As the products of vocational and technical education programs are employable workers, the tool most commonly used to evaluate the success of such programs has been a followup study of the graduates. Since not all followup studies have as their major goal an evaluation of the success of programs, studies which had other purposes have been included elsewhere. Although this section was not limited to followup studies, this was the methodology used in most of them.

Nursing

Technical Nursing. A study reported by Gordon (1964) provides data on a five-year followup study of diploma nurses. Although the respondents felt their preparation for nursing had been adequate and that they were satisfied with their careers, 30 percent indicated that they should have been better prepared in the basic sciences and 30 percent believed that they should have been prepared for team leadership and general administrative responsibility. Almost one-half held positions of leadership on either a full- or part-time basis at the time of the survey, though very few had continued their education.

Walker (1964) also reported a followup study of diploma nurses. This study substantiated the hypothesis that state board examination scores were higher for: (1) graduates from schools accredited by the National League for Nursing; (2) graduates of schools which rigorously screened applicants; (3) graduates from schools having the highest financial expenditure per student; and (4) graduates from schools having fewer clinical affiliations than other institutions. The one hypothesis that was not substantiated was that graduates from schools with a higher ratio of instructors to students would have lower state board examination scores. Walker suggests that it is apparent a school can make changes in its educational program which will greatly assist graduates to achieve higher scores on the state board examinations. No challenge is made of the relationships he found, but care is recommended in interpreting that these are necessarily casual relationships.

Bowman (1964) did a study of the graduates of California associate degree programs covering a period of six years following their graduation. She presented information and evaluation of such factors as: biographical data; status of employment; periods of service; amount of job orientation; quality of inservice training; supervision; responsibilities refused; adequacy of preparation; and future plans.

A study by Blaylock (1966) examined whether significant differences exist between the nursing programs from which associate degree nursing students

graduated and their performance after graduation. Criterion variables for success were state board examination scores and employer ratings on an evaluation instrument. The only variable of the 14 which was found to be predictive when compared to state board examinations scores was degrees held by full-time nursing faculty. None of the 14 variables were found to be predictive of success as measured by the employer ratings.

Fiorentino (1967) reported a study to measure whether associate degree graduates are meeting the expectations of their employing agents. The results indicated agreement on the expectations of what associate degree nurses should be able to do in the areas involving procedural skills and personal growth, but agreement did not exist in the areas of making nursing judgments, communication skills and administration. Fiorentino concluded that employers' expectations are being met in those areas involving comprehensive nursing care, but that associate degree graduates are not consistent in their ability to perform administrative functions. The associate degree graduates' primary area of difficulty in this regard was found to be in assigning patient care based on the subordinate's ability level.

Practical Nursing. State-wide and multi-state studies, as well as numerous local studies have been done to ascertain the success of programs in practical nursing.

Ramos, Pague and Barlow (1961) studied the graduates of vocational nursing programs in California. A very large number of the respondents indicated that they were presently employed as licensed vocational nurses; of those respondents who were unemployed, over one-half had been employed as licensed vocational nurses. Other data reported was related to the type of positions in which vocational nursing school graduates are employed, duties in which they are involved and opinions on their educational preparation. In a study of practical nursing graduates conducted by the Oklahoma State Board for Vocational Education, (1964a) the rate of employment among graduates was found to be quite high, they enjoyed their work and felt secure in their position; the graduates and their employers felt the licensed practical nurse was adequately prepared. The study also showed that both graduates and employers agreed that practical nurses are frequently given and expected to take more responsibilities than their training prepares them to assume. Other data pertinent to their employment situation and education program are also presented. In a report of his study, which included practical nurse graduates in Connecticut, Wilson (1966) presented findings similar to those in the previously mentioned studies.

A study by Eveland (1967b) is exemplary of numerous studies designed to evaluate the graduates of a particular practical nursing program. Her findings were based on information forms completed by the 45 graduates of two classes from the Wichita Practical Nursing School. She found that for graduates of this program, the average age was 25.3 years; 89.2 percent were located in Kansas one year following graduation; 87.7 percent had held just one job; 78.9 percent were earning between \$300 and \$350; 24.6 percent indicated no particular difficulty in their position; the performance of technical duties for which they

were not prepared was only reported by seven percent; inservice education was required for becoming medical nurses reported by 43.8 percent; 93.7 percent had successfully passed their state board examination for licensure on the first attempt; and 80.6 percent were employed by hospitals within the Wichita area. One factor relating to this study was unique; Eveland (1967a) had also conducted a followup study of graduates of this same school of nursing for ten years prior to the study of the 1966 graduates. Comparisons can therefore be made which should be of considerable assistance to this school in evaluating their program.

Studies by Heick (1963), Deans (1965), Dickey (1965), the Kenosha Technical Institute (1965) and Boyd (1966) were found to be somewhat similar to the type of study reported above. Although each individual study has some things about it that are unique from the others, the similarity of information gathered makes individual discussion of them unnecessary.

As indicated earlier, there are a number of practical nursing programs at the secondary level. Frazier and Stevenson (1968) reported a study to compare a class of graduates from a high school practical nursing program with those from a post high school program. Approximately one year following completion of training, it was found that all graduates were performing satisfactorily and no significant differences existed between the two groups. The authors, therefore, concluded that high school programs can be successful.

Other Health Occupations Education Programs

Only one study was found which evaluated a health occupations education program other than nursing. Stephenson (1967) studied the effectiveness of a community college dental assisting program in preparing its graduates for employment. The results of this study indicated many inconsistencies among: the importance of duties which beginning dental assistants were expected to perform as reported by dental assistants, the emphasis placed on skills in the classroom, the importance of various skills as reported by practicing dentists, and the dentists' evaluation of how adequately the graduates performed the required skills. Students in their educational program felt that laboratory skills were of primary importance. Dentists rated skill as fifth or sixth in importance but also indicated that the laboratory skills demonstrated by dental assistants were far below average. The dentists reported that "customer-processing" skills were of considerably greater importance than was reported by the dental assistants. Stephenson indicated that dentists prefer to hire older, more mature assistants, but are unwilling to pay the salaries which will attract such personnel.

Measurement and Grading

Research in the measurement and grading of students in health occupations education programs has been almost nonexistent. A publication by Rines (1963) covered the evaluation of student progress in the area of nursing. Her information was gathered through searches of the literature and interviews with nursing education instructors. Among the types of measures examined for

possible use in evaluating nursing practice were the anecdotal record, check list, rating scale, student self-evaluation and patient observations. The values and limitations of these tools were discussed. The need for a planned systematic program of evaluation was presented as were a number of principles and purposes of evaluation.

There have been suggestions that there is really no need to assign grades to students, and that in fact this process may even inhibit learning. Brown (1968) reported a study to ascertain whether testing and the assigning of grades actually motivates learning. A senior class in a hospital nursing school was divided into four random groups of from 11 to 14 students. Each group was taught for a period of three months by one instructor. Classes consisted of approximately eight to 10 hours per week and three days a week were spent in clinical practice, caring for ill children and interacting with patients. Course content was presented through active participation of the learners in class discussions, primarily through the use of patient care studies. Students were evaluated through observational techniques and were provided with clinical evaluations; but grades were not assigned, though their strengths and weaknesses were discussed. Students were, therefore, involved in their own evaluation. For purposes of comparison those students who had been taught this course by the same instructor for the three preceding years were used. Results of the study showed that students taught by the experimental method did as well as those who had received test grades, as measured by both the National League for Nursing achievement tests and their state board examination scores. Brown also indicated that the majority of students definitely preferred the unpressured situation where no tests were administered and no grades assigned.

RESEARCH

Although, as evidenced by the number of studies reviewed for this project, there has been considerable research in the area of health occupations education, little has been done that is appropriate to report under this section on research.

A two-part study by the University of Michigan (1967) examined the field of health manpower in order to recommend areas which should be given priority for academically based research.

A compilation of abstracts of research in health occupations education was recently completed by Tibbits (1968). In this publication were abstracts of the studies done in Iowa during the period between 1960 and 1968.

OTHER

The studies included in this chapter are those which examined the psycho-social characteristics and attitudes of health occupations students and employees.

Burr (1966) conducted a study to ascertain whether hypochondria of student nurses was a basic characteristic, which in part determines their occupational choice, or whether it is a learned response to their environment. She utilized the

Minnesota Multiphasic Inventory (MMPI) for which hypochondriasis is one of 10 clinical scales. The results of this study of hypochondria indicated that: the scores of entering freshmen nurses are higher than the general population of freshmen students; no difference exists between the scores of students who drop out of training and those who finish; and, the students' scores at the time of graduation were higher than when tested upon entry to the program. Burr suggests that student nurses need counseling to assist them in understanding their reactions to increased medical knowledge and to contacts with patients.

A survey of the psycho-social characteristics of students in two-year dental hygiene programs was conducted by Hewett (1967). The study revealed that dental hygiene students in dental affiliated programs and non-dental affiliated programs were quite similar. As might be expected, a larger portion of the students in programs affiliated with dental colleges expressed a desire to complete a baccalaureate degree.

The relationships between certain ability and personality variables and clinical performance during psychiatric-mental health nursing were analyzed by Blakeney (1963). Following a series of pre-tests and post-tests and clinical performance ratings of diploma nursing students it was found that: (1) changes in personality variables had occurred during psychiatric-mental health nursing experience, particularly for high achievers who tended to become less dogmatic; (2) a significant number of both high and low achievers had become more like their instructors on an ideal nurse concept scale; and (3) different instructors responded to different variables in assigning grades, but no combination of test variable could be found which contributed significantly to clinical grades.

A study of the person-centeredness of diploma and baccalaureate nurses was done by Rademacher (1964). The subjects were tested at the beginning and at the end of their psychiatric studies. Although diploma nurses showed a slight increase in person-centeredness and baccalaureate nurses showed a decrease, comparisons between and within groups showed no significant difference.

Stress in the first clinical practice of student nurses was examined by Meintel (1967). From an examination of nursing literature an extensive list of stress experiences were identified, classified, and tabulated according to the number of times they were reported. From an analysis of these experiences suggestions were made to reduce the possibility of stress situations in clinical practice. Meintel recommended that considerations be given to the social and psychological needs of patients when making clinical assignments in addition to the procedures to be performed.

In studying attitudes of diploma nursing students before and after their psychiatric hospital affiliation Crutchfield (1964) found significant changes had occurred. Her findings might well be of assistance to instructors in developing or revising curricula for psychiatric nursing.

A study by Suzuki (1968) examined the images of nursing occupations as seen by practical nursing students. The images of nursing occupations were measured with an instrument developed by Suzuki which identified four factors: (1) social intercourse, (2) on-the-job performance, (3) competence, and (4) an administrative dimension. The students' image of the practical nurse was found

to be between their image of the nurse aide and the registered nurse, but significantly closer to the registered nurse. Suzuki reports that the practical nursing students' images of the three levels of nursing occupations change during the first four months of their training. The images of the nursing occupations for those students who were employed as nurse aides prior to beginning their training did not differ from students without such experience.

The attitudes of registered and practical nurses toward each other were compared by Miller (1966). Many of the findings would be of importance only to the administrators and nurses of the two hospitals studied, but some of the factors examined might be of interest to others. The main areas of concern registered nurses expressed about practical nurses were in the area of nursing function and status. The practical nurses were concerned with status and felt that they are often assigned duties the registered nurse simply does not want to do herself.

Goldstein (1967) has identified attitudes toward birth, early childhood, disease entities, and death which may cause problems for students in practical nursing programs. She indicated that these attitudes may cause the students some difficulty in relating to patients. Avoidance behavior is reported to be one of the outcomes which may be caused by negative feelings in the above mentioned areas. Group counseling was found to be effective in helping those individuals who had attitude problems.

Anderson (1961) used a measure of environmental press, the College Characteristics Index, to determine whether student-faculty perceptions of educational environments would differ for baccalaureate and diploma nursing programs. She concluded that: (1) environmental press patterns of both types of programs suggested a concern for human relations, order and neatness in the physical environment, and personal organization and planning; (2) baccalaureate programs appeared to offer an expanding experience for students, whereas diploma programs seemed to provide a somewhat restricting experience; (3) faculty in both programs perceived some types of press which were not noted by students and vice versa; and (4) the educational environments of baccalaureate and diploma nursing programs differ.

A study by Gradel (1965) was designed to assess the relationships between students' needs and the college environmental press, as they relate to achievement in nursing education. Although no unusual findings were reported, relationships were shown which could be of use to those interested in this topic.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The large number of studies found for this review was heartening. As was expected the majority of these studies were in the nursing field, for the other areas of health occupations education are comparatively new.

Noticeable gaps were found in the areas of: philosophy and objectives, instructional materials and devices, facilities and equipment, administration,

teacher education, utilization of workers, career progression, and in the area of research itself. The authors hope that this publication will result in greater efforts in research being directed to all areas and aspects of health occupations education, and that particular attention will be given to the above mentioned areas.

There is great need to improve the quality of research in health occupations education. There were a few studies which were not included because it was felt that they were of questionable quality, but most of those reviewed were used. The authors would suggest that interested individuals obtain copies of the actual studies and assess their quality before making decisions based upon the data and the investigator's conclusions.

In considering the magnitude of the need for health occupations personnel, one cannot help but wonder how the job can possibly be accomplished, but after considering the many exciting activities which have been, and are being, done the authors feel that this challenge will be met.

Recommendations

To assist in meeting the present and future needs in health occupations education the authors make the following recommendations:

- (1) that there be a significant increase in education funds, primarily at the federal and state level, for operating programs and for conducting research;
- (2) that in-depth analysis be made of the functions of many of the health occupations in an effort to ascertain the actual roles and the learning experiences needed to prepare for the roles;
- (3) that health occupations personnel, at all levels, come to grips with the question of how health personnel can best be utilized to provide quality patient care;
- (4) that colleges and universities be encouraged to develop programs to prepare personnel to serve as teachers, researchers, and to provide the leadership for health occupations education;
- (5) that studies be conducted to determine the best type of preparation for teachers in health occupations education programs;
- (6) that more health occupations education personnel be prepared and encouraged to use new approaches to education, e.g., student-centered teaching, audio-tutorial methods and computer assisted instruction;
- (7) that there be informal classroom experimentation to test the new ideas which result from the conduct of research studies;
- (8) that studies, such as those reported in this publication, be replicated;
- (9) that increased efforts be made to disseminate the results of research studies and other materials developed so that duplication of efforts can be reduced; and,
- (10) that ways be devised to increase coordination and cooperation between vocational-technical education and the health professions, professional

schools, health oriented associations, and health agencies in order to arrive at workable solutions to concerns related to the field of health occupations education.

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Editor's note: Since the preparation of this manuscript The Center for Vocational and Technical Education has completed six documents on facility planning (see Facilities and Equipment, page 50) for Spring 1969 publication. These are:

- A Guide for Planning Facilities for Occupational Preparation Programs for Medical X-Ray Technicians*, by James D. MacConnell, Frank Brunetti, Joseph Hannon, Edwin Rios, and Clarke Schiller. (Research series, no. 31)
- A Guide for Planning Facilities for Occupational Preparation Programs for Medical Assistants*, by James D. MacConnell et al. (Research series, no. 32)
- A Guide for Planning Facilities for Occupational Preparation Programs for Medical Secretaries*, by James D. MacConnell et al. (Research series, no. 33)
- A Guide for Planning Facilities for Occupational Preparation Programs for Dental Laboratory Technicians*, by James D. MacConnell et al. (Research series, no. 34)
- A Guide for Planning Facilities for Occupational Preparation Programs for Dental Assistants*, by James D. MacConnell et al. (Research series, no. 35)
- A Guide for Planning Facilities for Occupational Preparation Programs for Dental Hygienists*, by James D. MacConnell et al. (Research series, no. 37)